ORAL ARGUMENT NOT YET SCHEDULED
Case No. 24-1171
(Consolidated with Nos. 24-1170 (lead), 24-1177)

United States Court of Appeals
For the District of Columbia Circuit

UNITED STATES STEEL CORPORATION.

***Petitioner*,**

v.

ENVIRONMENTAL PROTECTION AGENCY AND MICHAEL S. REGAN, ADMINISTRATOR, U.S. EPA,

***Respondents*.**

On Petition for Judicial Review of a Final Rule of the Environmental Protection Agency, 89 Fed. Reg. 23,294 (April 3, 2024)

REPLY IN SUPPORT OF MOTION FOR STAY

September 19, 2024

John D. Lazzaretti
Squire Patton Boggs (US) LLP
1000 Key Tower
127 Public Square
Cleveland, OH 44114
216.479.8500
john.lazzaretti@squirepb.com

Counsel for Petitioner United States Steel Corporation

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GLOSSARY

Act	Clean Air Act, 42 U.S.C. §7401, *et seq*.
EPA	Environmental Protection Agency
HAP	Hazardous Air Pollutant
MACT	Maximum Available Control Technology
Rule	National Emission Standards for Hazardous Air Pollutants: Integrated Iron and Steel Manufacturing Facilities Technology Review, 89 Fed. Reg. 23,294 (April 3, 2024)
RtC	Summary of Public Comments and Responses for Amendments to the NESHAP for Integrated Iron and Steel Manufacturing Facilities, Response to Comments, EPA-HQ-OAR-2002-0083-1976)
UPL	Upper Prediction Limit

EXHIBIT LIST[1]

A. National Emission Standards for Hazardous Air Pollutants: Integrated Iron and Steel Manufacturing Facilities Technology Review, 89 Fed. Reg. 23,294 (April 3, 2024) ("Rule")

B. Declaration of Alexis Piscitelli ("Piscitelli Declaration")

C. Declaration of Michael Mangahas ("Mangahas Declaration")[2]

D. EPA Correction and Reconsideration Letter (Aug. 14, 2024) ("EPA Letter")

E. Unmeasured Fugitive and Intermittent Particulate Emissions and Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFF (Feb. 22, 2024) ("UFIP Memorandum")

F. Summary of Public Comments and Responses for Amendments to the NESHAP for Integrated Iron and Steel Manufacturing Facilities, Response to Comments, EPA-HQ-OAR-2002-0083-1976) ("RtC")

G. Second Declaration of Alexis Piscitelli ("Second Piscitelli Declaration")

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[1] A complete set of exhibits is attached to this Reply.

[2] Includes as Attachment A worksheets referenced in the declaration but not attached to the July 3, 2024 filing.

INTRODUCTION

With little fact-finding and less analysis, EPA promulgated a Rule that wreaks havoc on the nation's iron and steel industry while simultaneously threatening public safety and increased emissions. EPA itself intends to correct and reconsider multiple aspect of the Rule, yet Petitioners must commit millions of dollars now, modify equipment, and disrupt operations to attempt to meet the Rule's unreasonable deadlines. This legally and factually flawed rule should not be implemented during judicial review.

The paucity of law or fact mustered by EPA and the Intervenors in their responses (collectively "Responses") underscores the infirmities of the Rule. Lacking a textual basis for ignoring plain statutory requirements, they lean on *Chevron* cases without regard for its reversal. Lacking record support, they cite baseless conclusions as if they were facts. Lacking explanation for the Rule's numerous impossible and illogical provisions, they ignore them.

In response to Petitioners' well-documented injuries, including safety concerns, millions in up-front costs for a Rule that will costs hundreds of millions to billions, and technical requirements that range from unnecessary to impossible, they offer little more than skepticism.

In response to the plain threat to the Nation's already pressured domestic iron and steel industry and the environmental and safety risks of the Rule, they offer only vague generalities on the benefits of environmental regulation.

Because a stay will avoid significant and irreparable harm to Petitioners from an error-filled Rule that is already being revised, U. S. Steel requests that its motion for stay be granted.

ARGUMENT

II. THE MERITS SUPPORT A STAY

EPA acknowledges the Rule has "several…errors and inconsistencies" and at least "three discrete aspects" that should also be reconsidered. EPA Response at 10, n.4. These errors go to the heart of the Rule, including the scope and stringency of its bleeder valve and bell leak work practices and the applicability of emission standards, many of which will soon take effect. *Id*; EPA Letter, 2 (Exhibit D). EPA is separately reconsidering significant portions of the Rule, including work practices and emission standards. *Id.* And EPA acknowledges it "may identify other issues suitable for reconsideration." *Id.* at 3.

EPA claims its errors and reconsideration do not undermine the "validity of the Rule." EPA Response at 10, n.4. But it offers no reason why its recognition of

multiple errors in the same provisions challenged by Petitioners[3] do not show that they are likely to succeed on the merits, or why Petitioners should continue to work to comply with standards that will be revised. In EPA's own cited case, this Court reversed agency action because the agency had inadequately explained issues no less central than those EPA has announced it needs to correct and reconsider. *Prairie Band Potawatomi Nation v. Yellen*, 63 F.4th 42, 47 (D.C. Cir. 2023). Here, the Rule is not just inadequately explained, it is wrong.

The errors EPA has acknowledged are also not the only grounds on which Petitioners are likely to succeed. The Rule violates several statutory requirements, which the Responses do not so much contest as seek to impermissibly excuse. The Rule also repeatedly mishandles record data, resulting in requirements that are impossible, unreasonable, and arbitrary and capricious.

A. EPA Failed to Comply with the Act.

The Act requires that standards promulgated under §7412 be safe, cost effective, and environmentally beneficial. *See* USS Motion at 8. EPA must meet additional requirements when it imposes emission standards under §7412(d)(3) and §7412(d)(6). Rather than claim that the Rule satisfies these requirements, the Responses chiefly seek to avoid them.

[3] *See* USS Motion at 10-11 (bell leaks), 9-10 (bleeders), 11-17 (multiple issue impact emission standards).

1. The Rule Fails to Address Safety, Cost, and Adverse Environmental Impacts.

As discussed in Petitioners' motion, the Rule was promulgated without consideration of the safety problems, extreme costs, and adverse environmental impacts it will cause. USS Motion at 8-9 (safety), 10-11 (environmental impacts), 14-17 (cost). In response, EPA asserts it *must* ignore these factors because it is bound to look only at numbers in setting "MACT floors." EPA Response at 24. It then, without further analysis, applies this same limitation to setting work practices under §7412(h). *Id.* at 20-21 (arguing unsafe bleeder limits were appropriate because EPA based them on the number of openings in a data set).

The Responses offer no textual basis to ignore safety, cost and environmental harms. Nor do they refer to any "traditional tools of statutory construction" that support such a reading. *Loper Bright Enters v. Raimondo*, 144 S. Ct. 2244, 2268 (2024). Instead, they rely on a line of cases stating that costs are not considered in setting MACT floors. *See* EPA Response at 25, n.11; Intervenor Response at 11. Since these cases were decided under *Chevron*, however, they addressed at most only whether EPA's position was "unreasonable," not whether this was the best reading of §7412. *Nat'l Lime Ass'n v. EPA*, 233 F.3d 625, 632 (D.C. Cir. 2000). EPA's footnote assertion that *Nat'l Lime* did not rely on *Chevron* is wrong. *See* 233 F.3d at 631 ("Relying on Chevron…). Indeed, it relied

on *Sierra Club v. EPA*, 167 F.3d 648, 661-62 (D.C. Cir. 1999) for its description of §7412, which also relied on *Chevron*.

Perhaps recognizing the weakness of this argument, EPA next, also in a footnote, claims *stare decisis*. EPA Response at 26, n.11. But *stare decisis* does not apply. The issue before this Court is not the validity of a regulation on which it has already ruled, but whether EPA can continue to apply an erroneous statutory interpretation to the current rulemaking.

Because the best reading of §7412 requires EPA to consider the safety, environmental impacts, and cost of its emission standards, both in setting emission standards under §7412(d) and in imposing work practices under §7412(h), and because the Rule expressly disclaims consideration of these factors, Petitioners are likely to succeed on the merits. *Motor Vehicle Mfrs. Assn. of United States, Inc. v. State Farm Mut. Automobile Ins. Co.*, 463 U.S. 29 (1983) (arbitrary and capricious to fail to consider "relevant factors").

2. EPA Set Emissions Standards in Violation of the Act.

This Court has stated that what is "achieved in practice" under 42 U.S.C. §7412(d)(3) should reflect "what is achievable in the worst reasonably foreseeable circumstances." *Sierra Club*, 167 F.3d at 665. EPA does not claim the Rule satisfies this requirement. Instead, it tries to minimize its obligation, claiming it only needs a "'reasonable estimate of the emissions achieved in practice by the

best-performing sources.'" EPA Response at 16 (quoting *U.S. Sugar Corp. v. EPA*, 830 F.3d 579, 639 (D.C. Cir. 2016)).

This implies a conflict where none exists. *U.S. Sugar* was quoting *Cement Kiln Recycling Coalition*, 255 F.3d 855, 871-72 (D.C. Cir. 2001), which itself relied on *Sierra Club*. And *Sierra Club* did not just hold that EPA "would be justified" in using worst reasonably foreseeable circumstances; it discussed why, if "achieved in practice" is to mean that the best performing units themselves will not violate the standard, which EPA itself does not contest here, "[t]his only results if 'achieved in practice' is interpreted to mean 'achieved under the worst foreseeable circumstances.'" 167 F.3d at 665. Similarly here, if EPA is to give "achieved in practice" its intended meaning, it must address what sources are achieving, not just by chance, but under the worst foreseeable circumstances.

An upper prediction limit ("UPL") is also no substitute for this assessment. Even EPA does not go so far as to claim they are the same. All EPA states is that this Court has approved emission limits that used a UPL. EPA Response at 16-17. Neither of the cases EPA cites, however, found that a UPL satisfies the statutory requirement that EPA set standards that have been "achieved in practice."

EPA also acknowledges that it did not apply the statutory definition of "emission limitations" when it determined the "average emission limitation achieved by the best performing" sources. EPA Response at 15. It attempts to

excuse this omission by claiming it "conflicts with case law," *id.*, but this is wrong for two reasons. First, as elsewhere, EPA's position relies on *Chevron* cases. *See Sierra Club*, 167 F.3d at 661 (relying on *Chevron*); *Ne. Md. Waste Disposal Auth. v. EPA*, 358 F.3d 936 (D.C. Cir. 2004) (relying on *Sierra Club*). Second, neither case addresses the issue here.

In *Sierra Club*, EPA did not assert that §7602(k) governed. It raised a "tortured argument" that EPA could, but was not required to, use regulatory requirements as a proxy for actual emissions. 165 F.3d at 661. This Court found "nothing inherently impermissible" about that interpretation under *Chevron*. *Id.* at 662. In *Ne. Md.* this Court simply looked to whether, under that same interpretation, the permits EPA selected were reasonable proxies. 358 F.3d at 954.

Under *Loper*, this Court applies the best reading of the statute. Here, the best reading is the one that gives meaning to the definition Congress enacted.

3. EPA Set Work Practices Without a Record Basis.

The Rule imposes numerous work practices with no demonstrated connection to HAP emissions. *See* USS Motion at 10. EPA claims it based its work practices on "evidence of actual reductions" but cites nothing for this claim. EPA Response at 20. EPA later cites a memorandum that estimates "UFIP" emissions. EPA Response at 21 (citing UFIP Memorandum (Exhibit E)). But while this memorandum has many problems, it is sufficient to note that it assumes

emission reductions from work practices, it does not offer evidence of them. Without a record basis for the work practices in the Rule, they are arbitrary and capricious. *State Farm*, 463 U.S. at 43.

4. EPA's Technology-Based Amendments Violate the Act.

The Act authorizes EPA to promulgate technology-based amendments under §7412(d)(6) only if they are "necessary" in light of "developments in practices, processes, and control technologies." The Rule imposes several requirements under §7412(d)(6), including sinter plant limits, fenceline monitoring, and opacity monitoring without any showing they are necessary or based on a true development in practices, processes, or control technology.

For example, EPA claims it can impose fenceline monitoring because it will "help limit emissions." EPA Response at 23. But not only does EPA cite nothing for this claim, being helpful does not make fenceline monitoring necessary, let alone show it arises from a development in practice, processes, or control technology.

As EPA itself states "EPA must consider whether revision of the standards is necessary based on developments in practices, processes, and control technologies." EPA Response at 20 (quotations omitted). Its failure to do so was error.

B. EPA's Arbitrary Approach Produced Arbitrary Results

EPA's claim that Petitioners "never dispute that the emission standards EPA established in the Rule have actually been attained" is false. Response at 18. The Rule repeatedly failed to use, or misused, data resulting in requirements that do not reflect what has been attained. And for the most part, the Responses offer no contradiction.

For example, the Rule limits unplanned bleeder openings based on data that only measured one type of bleeder, and then only over a single year. *See* USS Motion at 13. The result is limits that no furnace can meet on a continuous basis. *Id.* The Responses do not address this error.

The Rule also imposes requirements to regularly replace small bells to eliminate visible emissions. EPA cites no data showing any furnace is actually attaining zero visible emissions on a continuous basis, let alone that replacement schedules are used to achieve this result. USS Motion at 20. Again, EPA offers no response. Intervenors simply refer to EPA's conclusory statements, which themselves cite no data. Intervenor Response at 18.

The Rule requires monitoring of all planned bleeder openings and imposes an 8% opacity limit on them without any justification. USS Motion at 20-21. The Responses offer no defense. And EPA's own exhibit shows that three of EPA's five best performing sources have not continuously attained the limit. UFIP

Memorandum at B-1 (showing four of six sources had planned bleeder opacities above 8%).

The Rule imposes slag handling requirements based on data from only some slag handling activities, and imposes monitoring requirements so vague it cannot be determined what is required. USS Motion at 13; Piscitelli Declaration at ¶17. The Responses again offer no response.

The Responses also do not address the many impossible requirements in the Rule, including its requirement to conduct "instantaneous visible emission readings" without any method for doing so, and its requirements to read "each opening" at BOP Shops and casthouses, which cannot be done with current methods. *See* USS Motion at 20.

And EPA does not dispute that many standards in the Rule were based on fewer than the five sources required by §7412(d)(3)(B). EPA Response at 14-15. EPA claims it used all data it could "reasonably obtain." *Id.* (*quoting* 42 U.S.C. §7412(d)(3)(B)). But this is not supported by its own statement that it excluded data it found "illegible," unverified, or did not comport with procedures. *Id.* at 14. For data already in EPA's possession, there can be little reason for EPA not to ask for legible copies, verification, or even an explanation of the procedures used, before rejecting it, particularly when EPA was below the minimum data requirements in the statute.

EPA must both follow the plain language of the Act and "articulate a satisfactory explanation for its action" based on the data in the record. *State Farm*, 463 U.S. at 43. The Rule fails on both fronts, failing to make the necessary findings, failing to use the necessary data, and failing to articulate any record-based explanation for numerous requirements.

C. EPA Improperly Amalgamated Sinter Plant Costs.

EPA claims there is "no bright-line test for how EPA considers costs." EPA Response at 28. But it also cites no authority for using the cost of complying with one standard to impose a different standard. In *Arteva Specialties S.a.r.l. v. EPA*, 323 F.3d 1088, 1092 (D.C. Cir. 2003), on which EPA relies, this Court allowed EPA to aggregate the costs associated with applying a single "PET equipment leak standard." That is the opposite of what EPA does in the Rule. Here, EPA aggregated the cost-effectiveness of three *separate* standards imposed under two different subsections, §7412(d)(2) and (d)(6). *See* EPA Response at 6. This does not comport with the Act's mandate that EPA "tak[e] into consideration the cost of achieving *such emission reduction*" for sources "to which *such emission standard* applies." 42 U.S.C. §7412(d)(2) (emphasis added).

EPA acknowledges that "the cost per unit of reduction may not have supported setting standards…for each individual pollutant in isolation." EPA

Response at 31. And it cannot use "accounting gimmicks" to avoid its own findings. Intervenor Response at 16.

D. EPA's Fenceline Monitoring is Illegal.

EPA concedes that there is no method for conducting the Rule's fenceline monitoring. EPA Response at 7. Yet it nonetheless imposes fenceline monitoring requirements. This violates 42 U.S.C. §7607(d)(6)(C), which prohibits EPA from basing its Rule "(in part or whole) on any information or data which has not been placed in the docket as of the date of such promulgation."

Respondents assert the Rule delays compliance until a method is promulgated,[4] but moving the effective date does not change the date of promulgation or circumvent the requirements of §7607(d)(6).

Further, this delay does not change the fact that, whatever method EPA promulgates, it has already promulgated the action level to which these measurements will be compared. EPA cannot rationally separate a standard from how it is measured, and its attempt to set an action level now based on one measurement method, and then develop a separate method for measuring compliance with that action level, is inherently arbitrary and capricious.

[4] EPA Response at 23; Intervenor Response at 21.

III. PETITIONERS' INJURIES SUPPORT A STAY

A. The Rule's Unsafe Requirements Are an Irreparable Injury

Compliance with the Rule is unsafe. This alone is an irreparable injury. The Responses do not contest that bleeder valves must operate to prevent explosions that threaten worker safety and the public. Nor do they contest that several monitoring requirements places workers in unsafe conditions. *See* Piscitelli Declaration at ¶¶13, 17, and 21; Mangahas Declaration at ¶¶4, 7-8, 13, and 16.

EPA claims Petitioners can avoid safety concerns by violating the Rule. EPA Response at 35. But the law does not impose such requirements. *Morales v. Trans World Airlines, Inc.*, 504 U.S. 374, 381 (1992) (preliminary injunction warranted when airlines were faced with the Hobson's choice of continually violating the law, exposing themselves to "potentially huge liability" or suffering "the injury of obeying the law during the pendency" of a test case); *Kimberly-Clark Corp. v. Dist. of Columbia*, 286 F.3d 128, 147 (D.C. Cir. 2017) (imminent decision to "change its labels or expose itself to civil penalties…constitutes irreparable harm"). Here, violating the Rule would threaten not only huge civil judicial penalties (up to $121,275 per day),[5] but criminal liability for knowing violations. 42 U.S.C. §7413(b) and (c). Irreparable harm does not require first incurring these penalties to show a stay is warranted.

[5] 40 CFR 19.4.

Perhaps recognizing the flaw in EPA's argument, Intervenors asserts that "if there is an imminent safety threat, the Rule does not prevent steel mills from opening valves to avert harm." Intervenor Response at 17. But they cite no such provision in the Rule, which states only that "[y]ou must not cause unplanned bleeder valve openings in excess of" the numeric limits in the Rule. 89 FR at 23,330.

B. The Rule's Unrecoverable Costs Are an Irreparable Injury

Petitioners' immediate and unrecoverable costs are an independent irreparable injury. EPA's claim that economic loss alone does not constitute irreparable injury is wrong. EPA Response at 36. EPA relies on cases discussing *recoverable* costs, as is clear from the language EPA deleted from its quotation. *Wis. Gas Co. v. FERC*, 758 F.2d 669, 674 (D.C. Cir. 1985) ("Recoverable monetary loss…."). For the same reason, Intervenors' reliance on the same case to claim that hundreds of millions in costs are not "great" if they are a fraction of total revenue is incorrect. Intervenor Response at 28. Since the Responses do not claim Petitioners' costs are recoverable, no "existential threat" is required to establish irreparable injury.

Petitioners have estimated the Rule will cost $3.2 billion in capital investment and $749 million in annual costs. *See* Piscitelli Declaration at ¶¶34-35. It will cost U. S. Steel alone hundreds of millions. *Id.* These costs are well within

what courts have found sufficient to justifying a stay. *See Ohio v. EPA*, 144 S. Ct. 2040, 2053 (2024) (finding that compliance costs in the "hundreds of millions, if not billions of dollars" in "nonrecoverable" costs are "strong arguments about the harms they face and equities involved") (quotations and alterations omitted); *Thunder Basin Coal Co. v. Reich*, 510 U.S. 200, 220–221 (1994) (Scalia, J., concurring in part and concurring in judgment) ("complying with a regulation later held invalid almost *always* produces the irreparable harm of nonrecoverable compliance costs"); *Alabama Assn. of Realtors v. Department of Health and Human Servs.*, 594 U.S. 758, 765 (2021) (*per curiam*) (irreparable harm from agency moratorium on collecting rent payments "with no guarantee of eventual recovery" and preventing them from evicting tenants, intruding "on one of the most fundamental elements of property ownership").

There is also no real question that Petitioners' costs are imminent.[6] EPA itself recognizes that requirements first become effective one year from publication (April 2025). EPA Response at 37. EPA even modeled the Rule's regulatory impacts *assuming* "that full compliance with the standards will occur in early 2025." 89 FR at 23,295. And it extended the deadline for several requirements

[6] Intervenors claim no work need be done now, but do so only by questioning Petitioners' declarations without offering any contradictory evidence. Intervenor Response at 26.

from six months to three years in part to allow time to prepare for compliance. RtC, 195-198 (Exhibit F).

EPA asserts that the time it allotted is sufficient. Response at 37-39. But while Petitioners disagree, even if EPA were right, Petitioners must still prepare to comply *before* the applicable effective dates. The earliest compliance requirements, for example, require staffing sufficient personnel to comply with monitoring requirements that will alone cost a single facility approximately $1.6 million annually. *See* Mangahas Declaration at ¶14. U. S. Steel must also prepare for opacity limits, a BOP Shop Work Plan (which is to control basic operations such as how material is charged into and hot metal is poured from furnaces), and small bell replacements based on a work practice U. S. Steel is itself supposed to develop by April 2025. Piscitelli Declaration at ¶37; 89 FR at 23,323.

Preparations for later-arising obligation also cannot wait. Obligations arising in April 2026 include numeric limits on unplanned bleeder openings, work practices that control the material handling and operation of blast furnaces, and beaching operations, along with opacity limits for slag processing, all of which require long lead times to address. *See* Piscitelli Declaration at ¶40 ("testing alone will require at least 15 months").

For the same reasons, obligations arising in 2027 are resulting in irreparable injury now. As discussed in the declarations, limits are being imposed based on

technologies that are unresearched and not currently in use in the industry. *See* Piscitelli Declaration at ¶¶35, 42-43. The testing and research to prepare for such significant undertakings easily exceeds the three years allowed for compliance.

Indeed, U. S. Steel has already needed to commit $13 million to engineering development for the Rule. *See* Second Piscitelli Declaration, ¶10 (Exhibit G). For example, U. S. Steel cannot comply with the emission limits for sinter plants and must evaluate alternative technologies now to determine whether and how the limits could be achieved. *Id.* at ¶7. The end result is that "U. S. Steel is already required to incur substantial costs in order to prepare for the upcoming Rule deadlines." *Id.* at ¶14.

C. The Rule's Impossible and Impractical Requirements Are an Irreparable Injury

EPA claims the Rule's "MACT floor emission standards" will not require modifications. EPA Response at 37. While this is wrong, it ignores the many examples Petitioners provided of other requirements that will require them to "restructure their operations…during the multiyear period while the legality of the regulations is being challenged in court." *Labrador v. Poe*, 144 S. Ct. 921, 929 (2024) (Kavanaugh, J., concurring).[7] This includes hiring new opacity readers, changing the handling of raw materials, installing monitoring devices on blast

[7] Intervenors' claim that this case will "certainly be decided within a one-year timeframe" is inconsistent with current environmental litigation.

furnaces (which itself requires alterations to the furnaces and significant outages) and altering how blast furnaces are maintained. *See* USS Motion at 20.

EPA next tries to deflect the harms caused by the many impossible requirements in the Rule by arguing that they go to its validity. But in addition to showing that Petitioners are likely to succeed on the merits, these requirements also inflict injury by placing Petitioners in something worse than a Hobson's choice; they have no choice to comply with impossible requirements and must, absent a stay, risk noncompliance.

Contrary to Intervenors' assertion, a petitioner does not need to first suffer penalties to seek a stay. Intervenor Response at 29. A stay requires a showing that irreparable injury is "likely" not that it has already occurred. *Hollingsworth v. Perry*, 558 U.S. 183, 190 (2010); *see also Winter v. Natural Resource Defense Council*, *Inc.*, 555 U.S. 7, 22 (2008) ("Our frequently reiterated standard requires plaintiffs seeking preliminary relief to demonstrate that irreparable injury is *likely* in the absence of an injunction.") (emphasis in original).

D. There Was No Unreasonable Delay

EPA cites a preliminary injunction case from 1975 involving a request to ban hunting during a season that was "pretty well over on the day the case was argued." *Fund for Animals v. Frizzell*, 530 F.2d 982 (D.C. Cir. 1975). This is not "[j]ust so here." EPA Response at 39. Petitioners first timely sought

administrative relief from EPA as provided by statute. 42 U.S.C. §7607(b)(1). When EPA failed to act, they sought judicial relief. EPA states it will now reconsider the Rule, but EPA has not addressed Petitioners' request for a stay. Thus, a stay pending judicial review is still appropriate.

EPA's citation to 42 U.S.C. §7412(i)(3)(B) is inapt. EPA Response at 40. Petitioners have already asked EPA to stay the Rule. They do not need to ask again to exhaust administrative relief. *Ohio*, 144 S. Ct. at 2056. Further, §7412(i)(3)(B) applies only if time is needed "to install emission controls," which does not afford relief for research, development, and trialing of potential emissions controls (as no facility has "actually achieved" the new limits); work practices (which in this Rule may themselves require equipment installation); and monitoring requirements.

IV. PUBLIC INTEREST SUPPORTS A STAY

EPA does not contest that risk from the source category is already reasonable with an ample margin of safety. And with several of the Rule's provisions already being corrected or reconsidered, EPA cannot claim that public reliance on the current version of the Rule weighs against a stay. The most EPA asserts, therefore, is that the purpose of the *Act* is to "protect and enhance the quality of the Nation's air resources." EPA Response at 40 (quoting 42 U.S.C. §7401(b)(1)). But the Act's purpose has never been a bar to staying rules

promulgated under it. *See Ohio*, 144 S. Ct. at 2040. Indeed, another purpose of the Act is promoting "the productive capacity of its population." 42 U.S.C. §7401(b)(1). And none of EPA's cited cases find that Congress' balancing of these priorities weighs for or against a stay.

On the other hand, the Rule is highly disruptive to the nation's productive capacity. Iron and steel are vital domestic resources. The Responses claim that annual compliance costs are 0.02% of annual revenue is a vast underestimate; the real number is closer to 8%. *See* Piscitelli Declaration at ¶34. But a comparison to revenue also does nothing to undermine the significant threat to domestic iron and steel production caused by the Rule's many disruptive, illegal, ineffective, and costly requirements.

CONCLUSION

The Rule materially overhauls how this nation manufactures iron and steel. It does so without legal basis or factual support. The result is a dangerous, ineffective, costly, and impossible Rule. EPA itself has already identified several flaws yet steadfastly refuses to stay the Rule. As the factors for a stay are well-supported, U. S. Steel requests that its motion be granted.

Dated: September 19, 2024

Respectfully Submitted,

/s/John D. Lazzaretti
John Lazzaretti
SQUIRE PATTON BOGGS (US) LLP
1000 Key Tower

127 Public Square
Cleveland, OH 44114
216.479.8350
John.lazzaretti@squirepb.com

Counsel for Petitioner

Certificate of Compliance

I certify that this document complies with the type-volume limitation of Fed. R. App. P. 27(d)(2) and this Court's July 8, 2024 Order (Doc #2063334). The Reply contains 4,402 words, excluding the parts exempted by Fed. Rule App. Proc. 32(f), which, when combined with Cleveland-Cliffs' Reply, is less than one-half the aggregate word count of the responses to the stay motions.

I also certify that this document complies with the requirements of Fed. R. App. P. 27(d)(1)(E) because it has been prepared in 14-point Times New Roman font, using Microsoft Word in accordance with the typeface requirements of Rule 32(a)(5) and the type-style requirements of Rule 32(a)(6).

I further certify that this PDF file was scanned for viruses, and no viruses were found on the file.

Dated: September 19, 2024 *<u>/s/John D. Lazzaretti</u>*

John D. Lazzaretti

Certificate of Service

I certify that on September 19, 2024, I electronically filed the foregoing with the Clerk of Court using the CM/ECF system, which will send notification of the filing to all CM/ECF participants.

/s/John D. Lazzaretti
John D. Lazzaretti

Exhibit A

National Emission Standards for Hazardous Air Pollutants: Integrated Iron and Steel Manufacturing Facilities Technology Review, 89 Fed. Reg. 23,294 (April 3, 2024)

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 63

[EPA–HQ–OAR–2002–0083; FRL–5919.1–02–OAR]

RIN 2060–AV82

National Emission Standards for Hazardous Air Pollutants: Integrated Iron and Steel Manufacturing Facilities Technology Review

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: The U.S. Environmental Protection Agency (EPA or the Agency) is finalizing amendments to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Integrated Iron and Steel Manufacturing Facilities to regulate hazardous air pollutant (HAP) emissions. The amendments include: HAP from unmeasured fugitive and intermittent particulate (UFIP) sources previously not regulated by the NESHAP; previously unregulated HAP for sinter plants:; previously unregulated pollutants for blast furnace (BF) stoves and basic oxygen process furnaces (BOPFs) primary control devices; and previously unregulated pollutants for BF primary control devices. We are also finalizing an update to the technology review for this source category.

DATES: This final rule is effective June 3, 2024. The incorporation by reference (IBR) of material publications listed in the rule is approved by the Director of the Federal Register (FR) beginning June 3, 2024. The incorporation by reference (IBR) of certain other material listed in the rule was approved by the Director of the Federal Register (FR) as of July 13, 2020.

ADDRESSES: The EPA established a docket for this action under Docket ID No. EPA–HQ–OAR–2002–0083. All documents in the docket are listed on the *https://www.regulations.gov/* website. Although listed, some information is not publicly available, *e.g.,* Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the internet and is publicly available only in hard copy. With the exception of such materials, publicly available docket materials are available electronically in *https://www.regulations.gov/* or in hard copy at the EPA Docket Center, Room 3334, WJC West Building, 1301 Constitution Avenue NW, Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566–1744, and the telephone number for the EPA Docket Center is (202) 566–1742.

FOR FURTHER INFORMATION CONTACT: For questions about this final action, contact Katie Boaggio, Sector Policies and Programs Division (D243–02), Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, 109 T.W. Alexander Drive, P.O. Box 12055, Research Triangle Park, North Carolina 27711; telephone number: (919) 541–2223; email address: *boaggio.katie@epa.gov.*

SUPPLEMENTARY INFORMATION:

Preamble acronyms and abbreviations. Throughout this document the use of ''we,'' ''us,'' or ''our'' is intended to refer to the EPA. We use multiple acronyms and terms in this preamble. While this list may not be exhaustive, to ease the reading of this preamble and for reference purposes, the EPA defines the following terms and acronyms here:

ACI activated carbon injection
BF blast furnace
BOPF basic oxygen process furnace
BTF Beyond-the-Floor
CAA Clean Air Act
CBI Confidential Business Information
COS Carbonyl Sulfide
CFR Code of Federal Regulations
D/F dioxins and furans
EAV equivalent annualized value
EJ environmental justice
EPA Environmental Protection Agency
HAP hazardous air pollutant(s)
HCl hydrochloric acid
HF hydrogen fluoride
HMTDS hot metal transfer, desulfurization, and skimming
ICR Information Collection Request
II&S Integrated Iron and Steel
km kilometer
MACT maximum achievable control technology
NESHAP national emission standards for hazardous air pollutants
NTTAA National Technology Transfer and Advancement Act
OAQPS Office of Air Quality Planning and Standards
OMB Office of Management and Budget
PAH polycyclic aromatic hydrocarbons
PM particulate matter
PBT persistent, bioaccumulative, and toxic
PRA Paperwork Reduction Act
PV present value
RFA Regulatory Flexibility Act
RTR residual risk and technology review
SSM startup, shutdown, and malfunction
THC total hydrocarbons
TEQ toxic equivalency
tpy tons per year
UFIP unmeasured fugitive and intermittent particulate
UMRA Unfunded Mandates Reform Act
UPL upper prediction limit
VCS voluntary consensus standards
VE visible emissions
VOC volatile organic compound
WP work practice

Organization of this document. The information in this preamble is organized as follows:

I. General Information

A. Executive Summary

1. Purpose of the Regulatory Action

The EPA set maximum achievable control technology (MACT) standards for the Integrated Iron and Steel Manufacturing Facilities major source category in 2003 (68 FR 27645) under 40 CFR part 63, subpart FFFFF and completed a residual risk and technology review final rule in July 2020 (85 FR 42074). The purpose of this rule is to (1) fulfill the EPA's statutory obligations pursuant to CAA section 112(d)(6); *see Louisiana Environmental Action Network* v. *EPA,* 955 F.3d 1088 (D.C. Cir. 2020) (''*LEAN*''), and (2) improve the emissions standards for this source category based on new information regarding developments in practices, processes, and control technologies.

2. Summary of the Major Provisions of the Regulatory Action

To comply with CAA section 112, we are finalizing: (1) new emissions limits based on MACT for five currently unregulated HAP (COS, CS_2, Hg, HCl, and HF) from the sinter plants located at integrated iron and steel manufacturing facilities; and (2) new MACT standards, in the form of opacity limits and work practice (WP) standards, for five unregulated sources of UFIP emissions: Unplanned Bleeder Valve Openings, Planned Bleeder Valve Openings, Slag Pits, Beaching, and Bell Leaks. In this context, opacity is a measure of the amount of light that is blocked or absorbed by an air pollution plume. The components of air pollution that block or absorb light are primarily particulate matter (PM). An opacity level of 0 percent means that plumes of air pollution do not block or absorb light and are fully transparent (*i.e.,* no visible emissions), while an opacity of 100 percent means that plumes are dense and block all light (*i.e.,* the trained observer or special camera cannot see any background behind the plume). Observers are trained and certified using smoke generators which produce known opacity levels, and periodic recertification is required every six months. More details regarding the EPA approved method for opacity readings by a trained observer are available at the following website: *https://www.epa.gov/emc/method-9-visual-opacity.* Alternatively, opacity can be observed with special cameras following a specific method (known as the digital camera opacity technique (DCOT), 40 CFR 63.7823), and those images interpreted by trained individuals. For the Integrated Iron and Steel Manufacturing sector (and a number of other metals processing and production sectors), a significant portion of the emitted PM is composed of HAP metals (such as arsenic, lead, manganese, and chromium) that are primarily emitted in particulate form as demonstrated in the emissions tests available in the docket for this action. Therefore, for the Integrated Iron and Steel Manufacturing sector, as well as several other industry sectors, PM and opacity serve as surrogates for particulate HAP metals.

We are also finalizing new emissions limits for three unregulated pollutants for BF stoves and BOPFs: THC (as a surrogate for non-dioxin and non-furan organic HAP), HCl, and D/F; and for two unregulated pollutants for BFs: THC (as a surrogate for non-dioxin and non-furan organic HAP) and HCl. In this action, pursuant to CAA section 112(d)(6), we are also finalizing: (1) work practice standards for the basic oxygen process furnace (BOPF) shops; (2) a requirement that facilities conduct Method 9 readings two times per month at the BOPF Shop and BF casthouse; (3) a fenceline monitoring requirement for chromium to help ensure the work practices and opacity limits are achieving the anticipated reductions; and (4) revised standards for D/F and PAHs from sinter plants to reflect the installation and operation of activated carbon injection (ACI) technology. At this time, we are not finalizing the proposed revised opacity limits for the BOPF or the BF casthouse, as explained later in this preamble.

3. Costs and Benefits

To meet the requirements of E.O. 12866, the EPA projected the emissions reductions, costs, and benefits that may result from the final rule. These results are presented in detail in the regulatory impact analysis (RIA) accompanying this final rule developed in response to E.O. 12866. The final rule is significant under E.O. 12866 Section 3(f)(1), as amended by E.O. 14094, due to the monetized benefits of fine particulate matter ($PM_{2.5}$) reductions likely to result from the UFIP emissions standards included in the final rule. The RIA, which is available in the docket for this action, focuses on the elements of the final rule that are likely to result in quantifiable cost or emissions changes compared to a baseline without these regulatory requirements. We estimated the cost, emissions, and benefit impacts for the 2026 to 2035 period, discounted to 2024. We show the present value (PV) and equivalent annualized value (EAV) of costs, benefits, and net benefits of this action in 2022 dollars. The EAV represents a flow of constant annual values that would yield a sum equivalent to the PV. The EAV represents the value of a typical cost or benefit for each year of the analysis, consistent with the estimate of the PV, in contrast to year-specific estimates.

The initial analysis year in the RIA is 2026 because we assume that will be the first year of full implementation of the rule. We are finalizing that facilities will have 1 year to demonstrate compliance with the relevant standards following promulgation. This analysis assumes that full compliance with the standards will occur in early 2025. Therefore, the first full year of impacts will occur in 2026. The final analysis year is 2035, which allows us to provide ten years of projected impacts after the rule takes effect.

The cost analysis presented in the RIA reflects a nationwide engineering analysis of compliance cost and emissions reductions. Impacts are calculated by setting parameters on how and when affected facilities are assumed to respond to a particular regulatory regime, calculating estimated cost and emissions impact estimates for each facility, differencing from the baseline scenario, and then summing to the desired level of aggregation.

The EPA expects health benefits due to the emissions reductions projected from the rule. We expect that HAP emission reductions will improve health and welfare associated with reduced exposure for those affected by these emissions. In addition, the EPA expects that $PM_{2.5}$ emission reductions that will occur concurrent with the reductions in HAP emissions will improve air quality and are likely to improve health and welfare associated with exposure to $PM_{2.5}$ and HAP. For the RIA, the EPA monetized benefits associated with premature mortality and morbidity from reduced exposure to $PM_{2.5}$. Discussion of both the monetized and non-monetized benefits can be found in Chapter 4 of the RIA.

Table 1 presents the emission changes and the PV and EAV of the projected monetized benefits, compliance costs, and net benefits over the 2026 to 2035 period under the rule. All discounting

of impacts presented uses social discount rates of 3 and 7 percent.

TABLE 1—MONETIZED BENEFITS, COSTS, NET BENEFITS, AND EMISSIONS REDUCTIONS OF THE FINAL NESHAP SUBPART FFFFF AMENDMENTS, 2026 THROUGH 2035 [a]

[Dollar estimates in millions of 2022 dollars, discounted to 2024]

	3 Percent discount rate		7 Percent discount rate	
	PV	EAV	PV	EAV
Benefits [b]	$1,800 and $3,700	$200 and $420	$1,200 and $2,600	$170 and $340.
Compliance Costs	$45	$5.3	$36	$5.1.
Net Benefits	$1,800 and $3,700	$190 and $410	$1,200 and $2,600	$160 and $330.
Emissions Reductions (short tons)	2026–2035 Total			
HAP	640			
PM	18,000			
$PM_{2.5}$	4,700			
Non-monetized Benefits in this Table	HAP benefits from reducing 640 short tons of HAP from 2026–2035. Non-health benefits from reducing 18,000 tons of PM, of which 4,700 tons is $PM_{2.5}$, from 2026–2035. Benefits from reducing HCl, HF, Hg, D/F TEQ, COS, and CS2. Visibility benefits. Reduced vegetation effects.			

[a] Totals may not sum due to independent rounding. Numbers rounded to two significant digits unless otherwise noted.

[b] Monetized benefits include health benefits associated with reductions in $PM_{2.5}$ emissions. The monetized health benefits are quantified using two alternative concentration-response relationships from the Di et al. (2016) and Turner et al. (2017) studies and presented at real discount rates of 3 and 7 percent. The two benefits estimates are separated by the word "and" to signify that they are two separate estimates. Benefits from HAP reductions remain unmonetized and are thus not reflected in the table.

B. Does this action apply to me?

Table 2 of this preamble lists the NESHAP and associated regulated industrial source category that is the subject of this final rule. Table 2 is not intended to be exhaustive, but rather provides a guide for readers regarding the entities that this final action is likely to affect. The final standards are directly applicable to the affected sources. Federal, state, local, and Tribal government entities are not affected by this final action. As defined in the *Initial List of Categories of Sources Under Section 112(c)(1) of the Clean Air Act Amendments of 1990* (see 57 FR 31576; July 16, 1992) and *Documentation for Developing the Initial Source Category List, Final Report* (see EPA–450/3–91–030; July 1992), the Integrated Iron and Steel Manufacturing Facilities source category is any facility engaged in producing steel from iron ore. Integrated iron and steel manufacturing includes the following processes: sinter production, iron production, iron preparation (hot metal desulfurization), and steel production. The iron production process includes the production of iron in BFs by the reduction of iron-bearing materials with a hot gas. The steel production process occurs in the BOPFs where hot liquid iron from the BF is loaded (*i.e.,* charged) into the BOPF along with coke, lime, alloys, and steel scrap, and includes blowing oxygen into the furnace through a lance resulting in oxidation reactions to produce steel.

TABLE 2—NESHAP AND INDUSTRIAL SOURCE CATEGORIES AFFECTED BY THIS FINAL ACTION

Source category	NESHAP	NAICS code [1]
Integrated Iron and Steel Manufacturing Facilities	40 CFR part 63, subpart FFFFF	331110

[1] North American Industry Classification System.

C. Where can I get a copy of this document and other related information?

In addition to being available in the docket, an electronic copy of this action is available on the internet. Following signature by the EPA Administrator, the EPA will post a copy of this final action at *https://www.epa.gov/stationary-sources-air-pollution/integrated-iron-and-steel-manufacturing-national-emission-standards.* Following publication in the **Federal Register**, the EPA will post the **Federal Register** version of the final rule and key technical documents at this same website.

D. Judicial Review and Administrative Reconsideration

Under Clean Air Act (CAA) section 307(b)(1), judicial review of this final action is available only by filing a petition for review in the United States Court of Appeals for the District of Columbia Circuit (D.C. Circuit) by June 3, 2024. Under CAA section 307(b)(2), the requirements established by this final rule may not be challenged separately in any civil or criminal proceedings brought by the EPA to enforce the requirements.

Section 307(d)(7)(B) of the CAA further provides that only an objection to a rule or procedure which was raised with reasonable specificity during the period for public comment (including any public hearing) may be raised during judicial review. This section also provides a mechanism for the EPA to reconsider the rule if the person raising an objection can demonstrate to the Administrator that it was impracticable to raise such objection within the period for public comment or if the grounds for such objection arose after the period for

public comment (but within the time specified for judicial review) and if such objection is of central relevance to the outcome of the rule. Any person seeking to make such a demonstration should submit a Petition for Reconsideration to the Office of the Administrator, U.S. EPA, Room 3000, WJC South Building, 1200 Pennsylvania Ave. NW, Washington, DC 20460, with a copy to both the person(s) listed in the preceding **FOR FURTHER INFORMATION CONTACT** section, and the Associate General Counsel for the Air and Radiation Law Office, Office of General Counsel (Mail Code 2344A), U.S. EPA, 1200 Pennsylvania Ave. NW, Washington, DC 20460.

II. Background

A. What is the statutory authority for this action?

This action finalizes amendments to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for the Integrated Iron and Steel Manufacturing Facilities source category. The statutory authority for this action is provided by section 112 of the CAA, as amended (42 U.S.C. 7401, *et seq.*). In the first stage of the CAA section 112 standard-setting process, the EPA promulgates technology-based standards under CAA section 112(d) for categories of sources identified as emitting one or more of the HAP listed in CAA section 112(b). Sources of HAP emissions are either major sources or area sources, and CAA section 112 establishes different requirements for major source standards and area source standards. ''Major sources'' are those that emit or have the potential to emit 10 tons per year (tpy) or more of a single HAP or 25 tpy or more of any combination of HAP. All other sources are ''area sources.''

For major sources, CAA section 112(d)(2) provides that the technology-based NESHAP must reflect the maximum degree of emission reductions of HAP achievable after considering cost, energy requirements, and non-air quality health and environmental impacts. These standards are commonly referred to as MACT standards. CAA section 112(d)(3) also establishes a minimum control level for MACT standards, known as the MACT ''floor.'' In certain instances, as provided in CAA section 112(h), if it is the judgment of the Administrator that it is not feasible to prescribe or enforce an emission standard, the EPA may set work practice standards in lieu of numerical emission standards. The EPA must also consider control options that are more stringent than the floor, commonly referred to as ''beyond-the-floor'' (BTF) standards.

CAA section 112(d)(6) requires the EPA to review standards promulgated under CAA section 112 and revise them ''as necessary (taking into account developments in practices, processes, and control technologies)'' no less often than every eight years. While conducting this review, which we call the ''technology review,'' the EPA is not required to recalculate the MACT floors that were established during earlier rulemakings. *Nat. Resources Def. Council, et al.* v. *EPA,* 529 F.3d 1077, 1084 (D.C. Cir. 2008); *Ass'n of Battery Recyclers, Inc.* v. *EPA,* 716 F.3d 667 (D.C. Cir. 2013). The EPA may consider cost in deciding whether to revise the standards pursuant to CAA section 112(d)(6). However, costs may not be considered when setting the MACT floor and may only be considered when determining whether beyond-the-floor standards are appropriate. *See* CAA section 112(d)(3).

CAA section 112(f) requires the EPA to determine whether promulgation of additional standards is needed to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect. This review is known as the ''residual risk review,'' and it must occur within eight years after promulgation of the standards. When the EPA conducts the ''technology review'' together with the ''residual risk review,'' the combined review is known as a ''risk and technology review'' or ''RTR.''

The EPA initially promulgated the Integrated Iron and Steel Manufacturing Facilities NESHAP on May 20, 2003 (68 FR 27645), codified at title 40, part 63, subpart FFFFF (the NESHAP). The rule was amended on July 13, 2006 (71 FR 39579). The amendments added a new compliance option, revised emission limitations, reduced the frequency of repeat performance tests for certain emission units, added corrective action requirements, and clarified monitoring, recordkeeping, and reporting requirements.

In 2015, a coalition of environmental advocacy groups filed a lawsuit to compel the EPA to fulfill its statutory duty to conduct the CAA sections 112(d) and 112(f)(2) reviews of 21 NESHAPs, including Integrated Iron and Steel Manufacturing Facilities. As a result of that litigation, the EPA was required by court order to complete the RTR for the Integrated Iron and Steel Manufacturing Facilities source category by May 5, 2020. *California Communities Against Toxics* v. *Wheeler,* No. 1:15–00512, Order (D.D.C. March 13, 2017, as modified Feb. 20, 2020). The resulting RTR conducted for the Integrated Iron and Steel Manufacturing Facilities NESHAP was signed on May 4, 2020. 85 FR 42074 (July 13, 2020).

In an April 2020 decision by the U.S. Court of Appeals for the District of Columbia Circuit, on a petition for review of the EPA's NESHAP rulemaking for a different source category (pulp mill combustion sources), the court held that the EPA has an obligation to address all unregulated HAP emissions from a source category when the Agency conducts the eight-year technology review required by CAA section 112(d)(6). *Louisiana Environmental Action Network* v. *EPA,* 955 F.3d 1088, 1098–99 (''*LEAN*''). The parties in *California Communities Against Toxics* thereafter filed a joint motion to extend those deadlines to allow the EPA to revise the rules in accordance with the *LEAN* opinion. The court granted the motion, setting a new deadline for this rule of October 26, 2023. Order, *California Communities Against Toxics,* No. 15–512 (D.D.C. April 14, 2021). Based on further negotiation between the parties, the deadline for this final rule was changed to March 11, 2024. Minute Order, *California Communities Against Toxics,* No. 15–512 (D.D.C. Sept. 20, 2023).

In September 2021, industry and environmental advocacy groups filed petitions for review of the 2020 Integrated Iron and Steel Manufacturing Facilities final rule, and these petitions have been consolidated. *American Iron and Steel Inst., et al.* v. *EPA,* No. 20–1354 (D.C. Cir.); *Clean Air Council, et al.* v. *EPA,* No. 20–1355 (D.C. Cir.). The consolidated case is being held in abeyance pending the promulgation of this final rule. *See EPA's Unopposed Mot. to Hold Cases in Abeyance,* No. 20–1354 (consol.) (D.C. Cir.), Dkt. No. 2028131 (reporting to the D.C. Circuit the March 11, 2024 final rule deadline); Order, *American Iron and Steel Inst.,* No. 20–1354 (consol.) (D.C. Cir. Dec. 7, 2022).

In light of this litigation history, this final rule addresses multiple issues, including: (1) new standards to address previously unregulated emissions of HAP from the Integrated Iron and Steel Manufacturing Facilities source category pursuant to the *LEAN* decision and CAA sections 112(d)(2) and (3) and 112(h) and, (2) revised standards for a few currently regulated HAP, as well as fenceline monitoring requirements, pursuant to the CAA section 112(d)(6) technology review.

B. What is the source category and how does the current NESHAP regulate its HAP emissions?

As described above, the Integrated Iron and Steel Manufacturing Facilities source category includes any facility engaged in producing steel from refined iron ore (also known as taconite pellets). These facilities first produce iron from iron ore taconite pellets, sinter, coke, and other raw materials using blast furnaces (BFs), then produce steel from the hot liquid iron produced from the blast furnaces, along with coke, lime, alloys, steel scrap, and other raw materials using basic oxygen process furnaces (BOPFs). Integrated iron and steel manufacturing includes the following processes: sinter production, iron production, iron preparation (hot metal desulfurization), and steel production. The iron production process includes the production of iron in BFs by the reduction of iron-bearing materials with a very hot gas. The steel production process includes BOPFs and ladle metallurgy operations. Currently there are eight operating facilities in this source category.

The main sources of HAP emissions from integrated iron and steel manufacturing are the BF; BF stove; BOPF; hot metal transfer, desulfurization, and skimming (HMTDS) operations; ladle metallurgy operations; sinter plant windbox; sinter plant discharge end; and sinter cooler. All eight facilities have BFs, BF stoves, BOPFs, HMTDS operations, and ladle metallurgy operations. However, only three facilities have sinter plants and only two facilities with currently operating sinter plants.

The following are descriptions of the BF, BOPF, and sinter plants:

- The BF is a key integrated iron and steel process unit where molten iron is produced from raw materials such as iron ore, lime, sinter, coal and coke.
- The BOPF is a key integrated iron and steel process unit where steel is made from molten iron, scrap steel, lime, dolomite, coal, coke, and alloys.
- Sinter is derived from material formed in the bottom of the blast furnace, composed of oily scale, blast furnace sludge, and coke breeze, along with tarry material and oil absorbed from the sump in which the sinter is recovered. The sinter plant processes the waste that would otherwise be landfilled so that iron and other valuable materials can be re-used in the blast furnace. Only three sources covered by the Integrated Iron and Steel Manufacturing Facility category have sinter plants, down from nine facilities with sinter plants in 2003.

In addition to point sources, the EPA identified seven UFIP emission sources for this source category, including BF bleeder valve unplanned openings, BF bleeder valve planned openings, BF bell leaks, BF casthouse fugitives, BF iron beaching, BF and BOPF slag handling and storage operations, and BOPF shop fugitives. These UFIP emission sources were identified by observation of visible plumes by EPA regional staff during onsite source inspections and were subsequently investigated to determine the causes and any possible methods for reductions. These inspections are documented in numerous reports and photographs between 2008 and the present.[1] The NESHAP regulates two of these sources—BF casthouse fugitives and BOPF shop fugitives—with opacity limits.

The following are descriptions of the main process units and the seven UFIP sources:

- The BF is a key integrated iron and steel process unit where molten iron is produced from raw materials such as iron ore, lime, sinter, coal and coke.
- The BOPF is a key integrated iron and steel process unit where steel is made from molten iron, scrap steel, lime, dolomite, coal, coke, and alloys.
- Sinter is derived from material formed in the bottom of the blast furnace, composed of oily scale, blast furnace sludge, and coke breeze, along with tarry material and oil absorbed from the sump in which the sinter is recovered. The sinter plant processes the waste that would otherwise be landfilled so that iron and other valuable materials can be re-used in the blast furnace. Only three sources covered by the Integrated Iron and Steel Manufacturing Facility category have sinter plants, down from nine facilities with sinter plants in 2003.
- The BOPF shop is the structure that houses the entire BOPF and auxiliary activities, such as hot iron transfer, skimming, and desulfurization of the iron and ladle metallurgy operations, which generate fugitive emissions.
- The BF casthouse is the structure that houses the lower portion of the BF and encloses the tapping operation and the iron and slag transport operations, which generate fugitive emissions.
- The bleeder valve is a device at the top of the BF that, when open, relieves BF internal pressure to the ambient air. The valve can operate as both a self-actuating safety device to relieve excess pressure and as an operator-initiated instrument for process control. A bleeder valve opening means any opening of the BF bleeder valve, which allows gas and/or PM to flow past the sealing seat. Multiple openings and closings of a bleeder valve that occur within a 30-minute period could be considered a single bleeder valve opening. There are two types of openings, planned and unplanned.
- A planned bleeder valve opening means an opening that is initiated by an operator as part of a furnace startup, shutdown, or temporary idling for maintenance action. Operators can prepare the furnace for planned openings to minimize or eliminate emissions from the bleeder valves.
- An unplanned bleeder valve opening means an opening that is not planned and is caused by excess pressure within the furnace. The pressure buildup can occur when raw materials do not descend smoothly after being charged at the top of the BF and accumulate in large masses within the furnace. When the large masses finally dislodge (slip) due to their weight, a pressure surge results.
- Slag is a by-product containing impurities that is released from the BF or BOPF along with molten iron when the BF or BOPF is tapped from the bottom of the furnace. The slag is less dense than iron and, therefore, floats on top of the iron. Slag is removed by skimmers and then transported to open pits to cool to enable later removal. Usually there is one slag pit for every BF or BOPF.
- Iron beaching occurs when iron from a BF cannot be charged to the BOPF because of problems in steelmaking units; the hot molten iron from the BF is placed onto the ground, in some cases within a three-sided structure.
- The BF bells are part of the charging system on top of the furnace that allows for materials to be loaded into the furnace or next bell (as in the case of small bells) without letting BF gas escape. It is a two-bell system, where a smaller bell is above a larger bell. These bells must be tightly sealed to the blast furnace when not in use for charging, so that BF gas and uncontrolled emissions do not escape to the atmosphere. Over time, the surfaces that seal the bells wear down and need to be repaired or replaced. If these seals are not repaired or replaced in a timely manner, emissions of HAP and PM can increase significantly.

In the 2020 final rule, the Agency found that risks due to emissions of air toxics from this source category were

[1] *See, e.g.,* communications between B. Dickens and P. Miller, U.S. EPA Region V, Chicago, IL, with D.L. Jones, U.S. EPA, Office of Air Quality Planning and Standards, Office of Air and Radiation, 2015–2018. See also *Ample Margin of Safety for Nonpoint Sources in the II&S Industry.* Both documents are available in the docket to this rule.

acceptable and concluded that the NESHAP provided an ample margin of safety to protect public health. Although the 2020 NESHAP found the risks acceptable and no new requirements should be imposed, new data was collected via a CAA section 114 request to industry after re-opening the rule, due to the *LEAN* court decision. These new data necessitated technology review updates, in addition to establishing new MACT standards for unregulated HAPs pursuant to the *LEAN* court decision. Under the technology review in the 2020 RTR, the EPA found no developments in practices, processes, or control technologies that necessitated revision of the standards at that time. However, in response to a 2004 administrative petition for reconsideration of the 2003 NESHAP, the 2020 final rule promulgated a new MACT emissions limit for mercury (0.00026 lbs mercury/ton scrap metal) with two compliance options: (1) conduct annual compliance tests (to demonstrate compliance with the MACT limit); or (2) confirm that the facility obtains their auto scrap from suppliers that participate in the National Vehicle Mercury Switch Recovery Program (NVMRP) or another approved mercury switch removal program or that the facility only uses scrap that does not contain mercury switches. We also removed exemptions for periods of startup, shutdown, and malfunction (SSM) consistent with *Sierra Club* v. *EPA,* 551 F.3d 1019 (D.C. Cir. 2008); clarified that the emissions standards apply at all times; added electronic reporting of performance test results and compliance reports; and made minor corrections and clarifications for a few other rule provisions. All documents used to develop the previous 2003, 2006, and 2020 final rules can be found in either the legacy docket, A–2000–44, or the electronic docket, EPA–HQ–OAR–2002–0083.

The NESHAP includes emissions limits for PM and opacity standards—both of which are surrogates for non-mercury PM HAP metals—for furnaces and sinter plants. To support the continued use of PM as a surrogate for certain non-mercury HAP metals, we considered the holding in *National Lime Ass'n* v. *EPA,* 233 F.3d 625 (D.C. Cir. 2000). In considering whether the EPA may use PM, a criteria pollutant, as a surrogate for metal HAP, the D.C. Circuit stated that the EPA ''may use a surrogate to regulate hazardous pollutants if it is 'reasonable' to do so,'' *id.* at 637, establishing criteria for determining whether the use of PM as a surrogate for non-mercury metal HAP was reasonable. The court found that PM is a reasonable surrogate for HAP if: (1) ''HAP metals are invariably present'' in the source's PM,'' *id.*; (2) the ''source's PM control technology indiscriminately captures HAP metals along with other particulates,'' *id.* at 639; and (3) ''PM control is the only means by which facilities 'achieve' reductions in HAP metal emissions,'' *id.* If these criteria are satisfied and the PM emission standards reflect what the best sources achieve in compliance with CAA section 112(d)(3), then ''EPA is under no obligation to achieve a particular numerical reduction in HAP metal emissions.'' *Id.* The EPA has established and promulgated PM limits as a surrogate for particulate HAP metals successfully in several NESHAP regulations, including Ferroalloys Production (80 FR 37366, June 30, 2015), Taconite Iron Ore Processing (68 FR 61868), and Primary Copper Smelting (67 FR 40478, June 12, 2002).

The NESHAP also includes an operating limit for the oil content of the sinter plant feedstock or, as an alternative, an emissions limit for volatile organic compounds (VOC) for the sinter plant windbox exhaust stream. The oil limit, and the alternative VOC limit, serve as surrogates for all organic HAP. Moreover, the NESHAP includes an emissions limit for mercury emissions from the BOPF Group, which is the collection of BOPF shop steelmaking operating units and their control devices including the BOPF primary emission control system, BOPF secondary control system, ladle metallurgy units, and hot metal transfer, desulfurization and slag skimming units.

C. What changes did we propose for the Integrated Iron and Steel Manufacturing Facilities source category?

On July 31, 2023, the EPA published a proposal in the **Federal Register** to set standards to regulate HAP emissions from five UFIP sources that were not previously regulated by the NESHAP: Bell Leaks, Unplanned Bleeder Valve Openings, Planned Bleeder Valve Openings, Slag Pits, and Beaching. For sinter plants, we proposed standards for five previously unregulated HAP: COS, CS_2, Hg, HCl, and HF. For BF stoves and BOPFs, we proposed standards for three previously unregulated pollutants: THC (as a surrogate for non-dioxin and non-furan organic HAP), HCl, and D/F. And for BFs, we proposed standards for two previously unregulated pollutants: THC (as a surrogate for non-dioxin and non-furan organic HAP) and HCl.

As an update to the technology review, we proposed to revise the previous BOPF shop fugitive 20 percent opacity limit to a 5 percent opacity limit and require specific work practices; revise the current BF casthouse fugitive 20 percent opacity limit to a 5 percent opacity limit; and revise the current standards for D/F and PAH for sinter plants to reflect current control performance of sinter plants for these HAP. We also proposed a fenceline monitoring requirement for Cr, including a requirement that if a monitor exceeds the proposed Cr action level, the facility would need to conduct a root cause analysis and take corrective action to lower emissions.

III. What is the rationale for our final decisions and amendments for the Integrated Iron and Steel Manufacturing Facilities source category?

For each issue, this section provides a description of what we proposed and what we are finalizing, a summary of key comments and responses, and the EPA's rationale for the final decisions and amendments. For all comments not discussed in this preamble, comment summaries and the EPA's responses can be found in the document, *Summary of Public Comments and Responses for Proposed Amendments to the National Emission Standards for Hazardous Air Pollutants for Integrated Iron and Steel Manufacturing Facilities,* which is available in the docket for this action. This document is also referred to as the Response to Comments (RTC) in subsequent sections of this preamble.

A. Standards To Address Five Unregulated UFIP Sources for Both New and Existing Sources

1. What did we propose for the five previously unregulated UFIP sources?

a. BF Unplanned Bleeder Valve Openings

Based on the data we received through the CAA section 114 requests, the average number of unplanned openings of the best performing five furnaces in the source category is 5 unplanned openings per year. Therefore, we proposed an operational limit of five unplanned openings per year per furnace for existing sources, which was an estimate of the MACT floor level of performance for existing sources. For new sources, we proposed an operational limit of zero unplanned openings per year because the best performing single source in our database reported zero unplanned openings for the most recent representative year.

Additionally, we proposed work practice standards that would require facilities to do the following: (1) install and operate devices (*e.g.,* stockline monitors) to continuously measure/monitor material levels in the furnace, at a minimum of three locations, using alarms to inform operators of static conditions that indicate a slip may occur and alert them that there is a need to take action to prevent the slips and unplanned openings from occurring; (2) install and operate instruments such as a thermocouple and transducer on the furnace to monitor temperature and pressure to help determine when a slip may occur; (3) install a screen to remove fine particulates from raw materials to ensure only properly-sized raw materials are charged into the BF; and (4) develop, and submit to the EPA for approval, a plan that explains how the facility will implement these requirements. Additionally, we proposed that facilities would need to report the unplanned openings (including the date, time, duration, and any corrective actions taken) in their semiannual compliance reports.

b. BF Planned Bleeder Valve Openings

Based on our evaluation of available information and pursuant to CAA section 112(d)(2) and (3), for existing sources we proposed a MACT floor limit of 8 percent opacity for any 6-minute averaging period for the BF planned bleeder valve openings. We did not propose the BTF option of 5 percent opacity for existing sources because we determined that 5 percent opacity may not be feasible for some sources on a consistent basis. For new sources, we proposed an opacity of 0 percent because based on the available data, the best performing single source had opacity of 0 percent during the planned opening. We expect that new sources will be able to configure their furnace design and operations similarly to the best performing single source which, in combination with utilizing the suggested work practices described in the document *Unmeasurable Fugitive and Intermittent Particulate Emissions and Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR part 63, subpart FFFFF,* should allow them to achieve an opacity of 0 percent. We did not propose any work practices under CAA section 112(h) for the BF planned bleeder valve openings; facilities will have the flexibility to choose an appropriate approach to meet the opacity limit.

c. BF and BOPF Slag Processing, Handling, and Storage

Based on our analyses and pursuant to CAA section 112(d)(2) and (3), for existing sources we proposed a BTF opacity limit of 5 percent based on 6-minute averages for visible emissions from slag pits and during slag handling, storage, and processing. Regarding new sources, we proposed a MACT floor opacity limit of 2.5 percent based on 6-minute averages for visible emissions from slag pits and during slag handling, storage, and processing.

d. BF Bell Leaks

Based on our evaluation and pursuant to CAA section 112(d)(2) and (3), we proposed 10 percent opacity as an action level, as described below in this paragraph, for large bell leaks (not a MACT emissions limit). Along with this action level, we also proposed that the BF top will need to be observed monthly for visible emissions (VE) with EPA Method 22, 40 CFR part 60, appendix A–7, which determines the presence or absence of a visible plume, to identify leaks, and if VE are detected out of the interbell relief valve (indicating leaks from the large bell), we proposed that the facility would then need to perform EPA Method 9, 40 CFR part 60, appendix A–4, tests which determines the opacity (*i.e.,* degree to which a plume obscures the background), monthly and if opacity is greater than 10 percent (based on a 3-minute average), the large bell seals will need to be repaired or replaced within 4 months. For the small bell, we proposed that facilities will need to replace or repair seals prior to a metal throughput limit, specified by the facility, that has been proven and documented to produce no opacity from the small bells.

e. Beaching of Iron From BFs

Pursuant to CAA section 112(d)(2) and (3) and CAA section 112(h), we proposed a MACT standard that would require facilities to: (1) have full or partial enclosures for the beaching process or use CO_2 to suppress fumes; and (2) minimize the height, slope, and speed of beaching.

2. What comments did we receive on the proposed standards and, what are our responses?

a. BF Unplanned Bleeder Valve Openings

Comment: Commenters stated that in developing the proposed limit on the number of unplanned pressure release device (PRD) openings that could occur within a year, the EPA treated all BFs alike by placing them in a single category. Commenters stated that because larger BFs are able to accommodate higher internal pressures before the need for an unplanned opening, the EPA should create two separate subcategories of blast furnaces. Commenters stated that in reviewing data for unplanned PRD openings, they believed that subcategorization is appropriate and necessary if an action level or limit of any type is to be established for the number of events. In particular, commenters noted that large BFs have significantly fewer unplanned openings, where ''Large BF'' is defined as a BF with a working volume greater than 2,500 cubic meters (m^3). Commenters also stated that the EPA did not account for variability across sources and asked EPA to apply an upper prediction limit (UPL) if it were to finalize a limit on unplanned openings. Commenters stated that a 99 percent UPL analysis of the data supports limits of 52 unplanned openings for large BFs and 112 unplanned openings for small BFs.

Response: We agree with the commenter that larger BFs are able to accommodate higher internal pressure and that subcategorization based on BF size is appropriate. In this final rule, we define ''large BF'' as a BF with a working volume greater than 2,500 m^3 and are establishing separate limits on unplanned openings for large and small BF.

EPA also agrees with commenters that it is important to account for variability in the incidence of unplanned openings. Accordingly, in the final rule the EPA has decided to base the limit on the highest number of unplanned openings reported within the top five sources to ensure that we adequately account for variability, rather than the proposed approach of basing the limit on the average number of unplanned openings within the top five sources.

EPA disagrees with commenters' suggestion that it should apply a 99 percent UPL to determine the limit on unplanned openings. The EPA commonly uses the 99 percent UPL to calculate numerical emissions limits based on stack test data (*e.g.,* grams of HAP per cubic meter of stack exhaust gases). The UPL method is not appropriate to evaluate a count of unplanned openings because these are discrete events and are therefore not analogous to emissions data or test runs. In the context of this final rule, application of the UPL would therefore not appropriately reflect variability and would lead to an exceedingly high limit on unplanned openings that does not reflect the performance achieved at top-

performing sources. As noted above, the EPA has instead accounted for variability in this final rule by basing the limit on the highest number of unplanned openings observed among the five top-performing sources.

b. BF Planned Bleeder Valve Openings

Comment: Commenters agreed that these opacity limits will result in HAP reductions. Accordingly, commenters supported these revisions and additions and encouraged the EPA to not weaken any of the proposed limits.

Response: EPA appreciates the support and agrees that these opacity limits for planned bleeder valve openings will result in HAP reductions.

Comment: EPA should not adopt the proposed 8% opacity limit and weekly Method 9 testing for planned openings in addition to the new work practice standards. PRD openings by operators are routinely necessary and appropriate for proper BF operation. Emissions from planned openings are exceedingly low, ranging from 1.6 tpy to 0.3 tpy, with reductions projected between 0.4 and 0.08 tpy across the entire industry. The work practice standards are expensive, with estimated cost-effectiveness based upon the proposed rule having rates ranging from $134,000/ton to $672,000/ton. No regulation of these small contributors should occur. If EPA nonetheless moves forward, there should be an action level at 15% (based on a more robust UPL analysis).

Response: Based on our evaluation of public comments and available information, pursuant to CAA section 112(d)(2) and (3) and the *LEAN* court decision, for existing sources we are promulgating a MACT Floor limit of 8 percent opacity for any 6-minute averaging period for the BF planned bleeder valve openings. The MACT floor is the least stringent standard allowed by section 112 of the Clean Air Act. For new sources, we are promulgating an opacity of 0 percent because based on the available data, the best performing single source had opacity of 0 percent during the planned opening, which we consider the MACT Floor level for new sources pursuant to CAA section 112. As we explained in the proposed rule, we determined based on evaluation of available information that emissions can be minimized from bleeder valve planned openings cost effectively by implementing various actions before the valves are opened such as: (1) tapping as much liquid (iron and slag) out of the furnace as possible; (2) removing fuel and/or stopping fuel injection into the furnace; and (3) lowering bottom pressure. However, as explained in the proposed rule preamble, we did not propose any specific work practices for the BF planned bleeder valve openings and we are maintaining the decision to not require any specific work practices for the final rule. Facilities will have the flexibility to choose an appropriate approach to meet the opacity limit.

We estimate that this standard will result in about 0.41 tpy reduction in HAP metal emissions. The estimated cost is $54,600/yr for the entire category and $6,800/yr per facility. The estimated cost effectiveness is $134,000 per ton of HAP metals.

c. BF and BOPF Slag Processing, Handling, and Storage

Comment: Commenters stated that the proposed 5 percent opacity limit for slag handling operations should not be adopted. They contend that it is virtually impossible to enclose the extremely hot slag material or to universally apply water at all times to help suppress emissions because of the volatile nature of the material and the potential for a life-threatening hazardous explosion when the water violently expands in the form of steam. Commenters stated that the EPA had ignored these important safety concerns in proposing the 5 percent opacity limit, and that the control measures the EPA had identified to meet this limit could not be reasonably utilized. Commenters also argued that even if EPA's suggested control measures were applied, a UPL analysis would result in an opacity limit of 20 percent, far exceeding the proposed 5 percent level. Commenters noted that the EPA had improperly failed to account for variability in the performance of sources by declining to apply a UPL or other statistical analysis.

Response: After considering these comments, we agree that a limit of 5 percent opacity could result in higher cost impacts than we estimated at proposal for some facilities. As described in the proposed rule **Federal Register** notice published on July 31, 2023 (88 FR 49402), the proposed 5 percent opacity limit was a beyond-the-floor limit based on the EPA's understanding at that time that emissions could be cost effectively minimized from slag pits with the application of water spray or fogging and/or other work practices such as installing wind screens, dust suppression misters, and maintaining a high moisture content of the slag during handling, storage, and processing. However, at proposal we did not account for variability and certain other factors such as weather conditions and possible safety issues. Although we still conclude that these measures can help minimize emissions, these measures might not be sufficient to consistently maintain opacity below 5 percent.

In the proposed rule FR notice, we also described a potential MACT floor opacity limit of 9 percent for existing sources which was based on the straight average of the top five performing facilities. Based on the comments submitted, the EPA is finalizing an opacity limit of 10 percent based on a MACT floor analysis for existing sources. This final limit is based on the average opacity of 9 percent reported by the five top performing facilities, but rounding up slightly to 10 percent to account for variability. The EPA has historically used the UPL approach to develop MACT limits for stack emissions of individual pollutants, but has not historically determined opacity limits using a UPL approach. The UPL calculation introduces a predictive element to the statistics in order to account for variability. However, unlike typical emissions testing, EPA Method 9 tests frequently result in values of zero, which cannot be used in the UPL calculation so this approach for accounting for variability was not used. The EPA determined that rounding the opacity from 9 percent to 10 percent sufficiently accounts for variability in this process. Therefore, in this final rule we are promulgating a 10 percent opacity limit (based on six-minute averages) for slag processing, handling, and storage. Because this 10 percent opacity limit has been achieved in practice by top performing facilities, we expect that all facilities will be able to achieve this 10 percent opacity limit by application of some or all of the work practices described above and in the proposed rule **Federal Register** notice (88 FR 49402). Other comments and responses on this issue are provided in the RTC.

d. BF Bell Leaks

Comment: Commenters expressed concerns that the proposed triggers for action for large bells are too low and that the repair and replacement time should consider lead time and operational concerns. Commenters suggested that with this in mind, the EPA could establish a 20 percent opacity action level (6-minute average) with quarterly EPA Method 9 observation requirements. Under this approach, if a facility observes opacity in excess of 20 percent, the facility should be required to investigate, make operational changes, and conduct a repair, followed by repeat testing using EPA Method 9 to confirm the efficacy of the repair. If repairs are not successful, only then would replacement obligations be triggered. Other

commenters stated that if the EPA moves forward with work practice standards, the EPA should consider an alternative under which a facility would need to initiate operational or other corrective actions within five business days if an EPA Method 9 test identifies opacity of 20 percent or more. If the facility does not reduce opacity to less than 20 percent with those actions, the facility would have another five business days to initiate further operational or other corrective actions to reduce opacity to less than 20 percent. Only if the second attempt does not result in opacity of 20 percent or less would the test result be deemed a deviation requiring reporting and corrective actions, such as moving to the repair step or, if necessary, replacement of the large bell.

Response: We agree with the commenter who suggested the two-step approach for large bells is appropriate as well as the suggestion of 20% opacity instead of 10% opacity as a trigger. As discussed by the commenter, the replacement of bells is costly and there are numerous more cost-effective repair options available that can be achieved in a shorter time period to avoid full repair and replacement. This would help keep the bell repairs on a more organized schedule. Therefore, we decided to finalize a 20 percent opacity action level (instead of the proposed 10 percent opacity action level) and provide two five-business day periods to investigate the opacity trigger, as suggested by the commenter. Specifically, we changed the requirement to the following: if EPA Method 9 identifies opacity greater than 20 percent, the facility shall initiate corrective actions within five business days. If the first attempt to correct fails and EPA Method 9 again identifies that opacity is not reduced to 20 percent or lower, the facility would have another five business days to initiate further corrective actions to reduce opacity to 20 percent or lower. Only if the second attempt does not result in an opacity of 20 percent or less would it become a deviation, requiring reporting and corrective actions that we included in the proposed rule, such as moving to the repair step or, if unsuccessful, replacement of the large bell.

e. Beaching of Iron From BF's

Comment: Commenters supported the proposal to require facilities to: (1) have full or partial enclosures for the beaching process or use CO_2 to suppress fumes; and (2) minimize the height, slope, and speed of beaching. Commenters supported the addition of monitoring of vents from the partial enclosures to allow for additional information and accountability for these sources.

Response: EPA appreciates the support for the beaching requirements in the proposed rule.

Comment: Industry commenters stated that the proposed work practice standards to address already low emissions from beaching events, which the industry consistently works to minimize, would not provide meaningful reductions and would be extremely costly. Industry commenters estimated about 4 pounds per year of reduction from these proposed measures, lower than the estimates EPA provided in the final rule. Commenters also pointed out that EPA's estimated cost per ton of removal would be $15.8 million/ton and argued that this amount is unreasonable notwithstanding EPA's explanation that it must adhere to the floor provisions of the statute. Commenters stated that if EPA were to use the more accurate emissions and cost information provided by industry, the cost-effectiveness rate estimate based upon the proposed rule would be multiple times higher at $311 million/ton. Commenters also argued that EPA could reasonably interpret Section 112(d) to avoid this result.

Response: As EPA explained in the proposal preamble, as mandated by the *LEAN* court decision and CAA sections 112(d)(2), 112(d)(3), and 112(h), we proposed a MACT floor standard (which is the least stringent standard allowed by section 112 of the Clean Air Act) that would require facilities to: (1) have full or partial enclosures for the beaching process or use CO_2 to suppress fumes; and (2) minimize the height, slope, and speed of beaching. We expect this will result in a small amount of unquantified emission reductions since baseline emissions are already low (less than 1 tpy of HAP) and because most facilities are already following some or all of these work practices. Regarding costs, when EPA determines the MACT floor level of control, per the section 112 of the CAA, the EPA is obligated to determine the MACT floor level regardless of costs. It is only the potential beyond-the-floor standards for which costs become an important consideration. Nevertheless, as we mentioned in the proposal preamble, the estimated costs are only $55,000 per year for the entire category and an average annual cost of $6,800 per facility. More information regarding the standards for unregulated UFIP sources is available in the following document: *Unmeasurable Fugitive and Intermittent Particulate Emissions and Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR part 63, subpart FFFFF,* which is available in the docket for this action.

After considering public comments and available information, pursuant to CAA sections 112(d)(2) and (3) and 112(h) and the *LEAN* court decision, we are promulgating the same MACT Floor standard as proposed.

3. What are the final MACT standards and how will compliance be demonstrated?

a. BF Unplanned Bleeder Valve Openings

In certain instances, as provided in CAA section 112(h), if it is the judgment of the Administrator that it is not feasible to prescribe or enforce an emission standard under CAA section 112(d)(2) and (3), the EPA may set work practice standards under CAA section 112(h) in lieu of numerical emission standards. For BF unplanned bleeder valve openings, the Administrator has determined that since there is no direct measurement of emissions, we are finalizing a work practice standard. We are finalizing an operational limit for two subcategories of blast furnaces: large furnaces with a working volume of equal to or greater than 2,500 m^3; and small furnaces with a working volume of less than 2,500 m^3. This is to account for variability in unplanned opening occurrences between furnace size due to design elements that allow higher operating pressure near the valve openings, which leads to less openings per year for large furnaces. For the large blast furnaces, we are finalizing an operational limit of four unplanned openings per rolling year per furnace. For small blast furnaces, we are finalizing an operational limit of 15 unplanned openings per rolling year per furnace. Both are based on a qualitative approach of using the highest number of unplanned openings from the top five performing furnaces (top four for large furnaces as there are only four operating large furnaces). For most MACT floor standards in NESHAP rules, we typically have actual emissions test data for each of the top five sources. To calculate the MACT floor limit we use all the data (all the runs) from all 5 sources to calculate the 99th UPL to account for variability. And, we conclude that this 99th value (which is higher than the true average) represents the average performance of the top 5 sources with an adjustment to account for variability.

With unplanned openings, we do not have a UPL type tool. So, as an alternative to a UPL, we considered all the data from the top five performers,

and to ensure we account for variability among those top five performers, in this particular situation, we conclude that using the highest value (*i.e.,* highest number of unplanned openings) from any one source within the top five reflects our best estimate of an appropriate limit that would reflect performance of the top five sources with an adjustment to ensure we adequately account for the variability among those top five sources.

This approach is appropriate because it accounts for variability among the top five blast furnaces. For new sources, we are finalizing our proposed operational limit of zero unplanned openings per rolling year for both large and small furnaces because the best performing single source large and small blast furnace in our database reported zero unplanned openings for the most recent typical year.

Additionally, we are finalizing the work practice standards proposed for both furnace subcategories that require facilities to do the following: (1) install and operate devices (*e.g.,* stockline monitors) to continuously measure/monitor material levels in the furnace, at a minimum of three locations, using alarms to inform operators of static conditions that indicate a slip may occur, and alert them that there is a need to take action to prevent the slips and unplanned openings from occurring; (2) install and operate instruments such as a thermocouple and transducer on the furnace to monitor temperature and pressure to help determine when a slip may occur; (3) install a screen to remove fine particulates from raw materials to ensure only properly-sized raw materials are charged into the BF; and (4) develop, and submit to the EPA for approval, a plan that explains how the facility will implement these requirements. Additionally, facilities shall report the unplanned openings (including the date, time, duration, and any corrective actions taken) in their semiannual compliance reports.

b. BF Planned Bleeder Valve Openings

We are finalizing what we proposed for planned bleeder valve openings: a MACT floor limit of 8 percent opacity based on 6-minute averages. For new sources, we are finalizing an opacity of 0 percent. Facilities will have the flexibility to choose an appropriate approach to meet these opacity limits.

c. BF and BOPF Slag Processing, Handling, and Storage

As discussed above, we are finalizing an opacity limit of 10 percent based on 6-minute averages for BF and BOPF slag processing, handling, and storage, and slag pits. Regarding new sources, we are finalizing an opacity limit of 3 percent based on 6-minute averages for visible emissions from slag pits, and during slag handling, storage, and processing.

d. BF Bell Leaks

For bell leaks, we are finalizing a 20 percent opacity action level for large bell leaks as described below for new and existing large bells. This is not a numerical MACT emissions standard; because the Administrator has determined that it is not feasible to prescribe or enforce an emission standard in this instance, pursuant to CAA section 112(h), the EPA is setting work practice standards in lieu of numerical emission standards. We are also finalizing that the BF top must be observed monthly for visible emissions (VE) with EPA Method 22, 40 CFR part 60, appendix A–7, which determines the presence or absence of a visible plume, to identify leaks from the interbell relief valve (indicating leaks from the large bell). If VE are detected out of the interbell relief valve (indicating leaks from the large bell), the facility must perform EPA Method 9, 40 CFR part 60, appendix A–4, tests which determines the opacity (*i.e.,* degree to which a plume obscures the background) monthly, and if opacity is greater than 20 percent based on an average of three instantaneous and consecutive interbell relief valve openings, the facility must initiate operational or other corrective actions within five business days. After those five business days, the facility must perform EPA Method 9 tests again and, if opacity is greater than 20 percent, the facility will have another five business days to initiate further operational or corrective actions to reduce opacity to 20 percent or lower. After five additional business days (10 business days in total), the facility must perform EPA Method 9 tests again and, if opacity is still greater than 20 percent, the large bell seals must be repaired or replaced within four months. For the new and existing small bells, we are finalizing what we proposed, a requirement that facilities shall replace or repair seals prior to a metal throughput limit, specified by the facility, that has been proven and documented to produce no opacity from the small bells. Additionally, the facility must conduct monthly visible emissions testing for 15 minutes and amend the metal throughput limit in their operation and maintenance (O&M) plan as needed.

e. Beaching of Iron From BFs

As provided in CAA section 112(h), it is the judgment of the Administrator that it is not feasible to prescribe or enforce an emission standard for emissions from the beaching process, therefore the EPA is finalizing the proposed work practice standards in lieu of numerical emission standards. This work practice standard requires facilities to: (1) have full or partial enclosures for the beaching process or use CO_2 to suppress fumes; and (2) minimize the height, slope, and speed of beaching. This standard applies to both existing and new sources.

B. Reconsideration of BF Casthouse and BOPF Shop Standards for Currently Regulated Fugitive Sources Under CAA Section 112(d)(6) Technology Review

1. What did we propose for the BF casthouse and BOPF shop?

a. BF Casthouse

We proposed a 5 percent opacity limit based on 6-minute averages as an update to the CAA section 112(d)(6) technology review and proposed that facilities will need to measure opacity during the tapping operations (at least two times per month). We did not propose specific work practices for the BF casthouse, except that we proposed that the facilities will need to keep all openings, except roof monitors, closed during tapping and material transfer events (the only openings allowed during these events are those that were present in the original design of the casthouse).

b. BOPF Shop

Based on our review and analyses of the CAA section 114 information request responses we received in 2022 and 2023, and further review of the data the EPA assembled to support the 2020 RTR, we proposed that a standard composed of a 5 percent opacity limit with several specific work practices would be feasible and cost-effective for the BOPF shop. For example, based on the data we received, in the proposal we found that the maximum 3-minute opacity readings for the BOPF shops at four facilities were less than 5 percent. Furthermore, the use of work practices (described below) by the best performing facilities in the industry led us to conclude for the proposal that these work practices were feasible and, accordingly, we proposed a 5 percent opacity limit based on 3-minute average and work practices.

Specifically, we proposed that facilities will need to do the following: (1) keep all openings, except roof monitors (vents) and other openings that

are part of the designed ventilation of the facility, closed during tapping and material transfer events (the only openings that would be allowed during these events are the roof vents and other openings or vents that are part of the designed ventilation of the facility) to allow for more representative opacity observations from a single opening; (2) have operators conduct regular inspections of BOPF shop structure for unintended openings and leaks; (3) optimize positioning of hot metal ladles with respect to hood face and furnace mouth; (4) monitor opacity twice per month from all openings, or from the one opening known to have the highest opacity, for a full steel cycle, which must include a tapping event; and (5) develop and operate according to an Operating Plan to minimize fugitives and detect openings and leaks. We proposed that the BOPF Shop Operating Plan shall include:

- An explanation regarding how the facility will address and implement the four specific work practices listed above;
- A maximum hot iron pour/charge rate (pounds/second) for the first 20 seconds of hot metal charge (*i.e.,* the process of adding hot iron from the BF into the basic oxygen process furnace);
- A description of operational conditions of the furnace and secondary emission capture system that must be met prior to hot metal charge, including:
- A minimum flowrate of the secondary emission capture system during hot metal charge;
- A minimum number of times, but at least once, the furnace should be rocked between scrap charge and hot metal charge;
- A maximum furnace tilt angle during hot metal charging: and;
- An outline of procedures to attempt to reduce slopping.

2. What comments did we receive on the proposed revised BF casthouse and BOPF shop standards, and what are our responses?

a. BF Casthouse

Comment: Commenters noted that the EPA did not apply UPL calculations to the opacity data, even though the EPA's practice has been to do so for other numerical standards established on limited data sets. Commenters claim that the EPA's proposed opacity limit of 5 percent, without any adjustment for variability, lacked justification or explanation and is therefore arbitrary and capricious. These commenters argued that, when utilizing limited datasets, it is appropriate for the EPA to account for variability, and there is no technical basis for suggesting that some statistical methods should not be applied to this data set. When the EPA set the 20 percent opacity limits in 2003, the preamble included the EPA's statistical basis supporting that the limits were achievable. Commenters also stated the EPA should also include a one-time alternative limit per furnace cycle similar to the new source standards in the 2003 NESHAP.

Response: The EPA disagrees with the specific approach of using UPL calculations to develop opacity limits in the same manner that the UPL is used to calculate emissions limits. The EPA has historically used the UPL approach to develop MACT limits for stack emissions of individual pollutants but has not historically determined opacity limits using a UPL approach. The UPL calculation introduces a predictive element to the statistics in order to account for variability. However, as noted by the commenter, unlike typical emissions testing, EPA Method 9 may result in values of zero, which cannot be used in the UPL calculation. While the EPA has used the UPL approach for floor determinations when setting MACT emissions limits, the proposed changes to the BOPF Shop and BF casthouse opacity standards were based on a proposed updating of the CAA section 112(d)(6) technology review. Additionally, in the case of opacity measured according to EPA Method 9, the data EPA reviewed to develop the proposed standards were the maximum 6-minute (or 3-minute as applicable) averages evaluated over the entire test period. Likewise, compliance determinations are also based on the same approach. Utilizing the maximum short-term average during each test period to determine an appropriate standard, and to determine compliance, inherently accounts for some variation in the data used to set the standard.

However, with regard to the comments on variability, we acknowledge that there are many opacity readings that occurred over the past 2 to 6 years at the Integrated Iron and Steel (II&S) manufacturing facilities that show that there is a substantial amount of variability in opacity measurements across time and across furnaces. For example, many opacity tests for BOPF and BF furnace cycles that were completed over these 2–6 years reported maximum 3-minute and 6-minute opacity readings below 5 percent for a substantial amount of the cycles. In fact, for many furnace cycles the maximum opacity was 0 percent. On the other hand, the data show that during some BOPF or BF cycles, opacity is above 5 percent and sometimes well above 20 percent. The EPA has additionally continued to receive opacity data and analyses since the close of the public comment period on this rulemaking.

The EPA was not able to adequately analyze all the available data before the deadline for this final rule ordered by the court in *California Communities Against Toxics.* Also, for most of the opacity tests that had maximum opacity readings above 5 and 10 percent, the EPA does not have any information that explains why the opacity readings were higher than 5 percent on those particular days. In most cases, the EPA is unable to determine the cause of the higher values based on the data and information currently available. Until further revision, the opacity limits in the NESHAP for existing BOPF Shops and existing BF casthouses will remain at 20 percent based on 3-minute averages for the BOPF Shop and 6-minute averages for the BF casthouse.

The opacity data and further explanation of the opacity data and related information can be found in the technical memo titled: *Unmeasured Fugitive and Intermittent Particulate Emissions and Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR part 63, subpart FFFFF,* which is in docket for this final rule.

b. BOPF Shop

Comment: Some commenters conducted their own assessment of what measures would be needed to comply with the proposed opacity limit and work practice standards, which is of course facility-specific, because every BOPF shop is unique. Based on their assessments, these commenters asserted that each BOPF shop—after applying all ''required'' work practice standards and even other work practices that the EPA suggested—would likely need to install full-shop controls to meet a 5 percent opacity limit at all times. The commenters represented that the cost to apply this type of control would be high and would involve the addition of at least one large fabric filter device to properly capture fugitive emissions and allow for proper ventilation for the building. The commenters asked EPA to take into account the significant changes BOPF shops would have to make to meet a 5 percent opacity standard that even the best performers cannot currently achieve on a regular basis. They suggested that because of the exorbitantly and unreasonably expensive measures that would need to be undertaken by this industry sector, and the significant possibility that even facilities installing such measures would not be able to consistently meet

the 5 percent opacity standard, the EPA should not move forward with the proposed opacity limit, at least until the Agency undertakes a robust engineering analysis to determine the technical and economic feasibility of controls that would be needed for BOPF shops to meet this lower standard.

Response: After considering public comments, the EPA now recognizes some operations may need to make more significant changes than we anticipated at proposal to meet the 5 percent opacity standard at all times. We acknowledge that there are many opacity readings that occurred over the past 2 to 6 years that indicate that there is a substantial amount of variability across time and across furnaces. For example, many opacity tests for BOPF cycles (*i.e.,* steel cycles) that were completed over these 2–6 years reported maximum 3-minute opacity readings below 5 percent for a substantial amount of the cycles. On the other hand, the data show that during some BOPF cycles, opacity is above 5 percent and sometimes above 20 percent.

The EPA was not able to adequately analyze all the available data before the court-ordered deadline for this final rule. Also, for those tests that had maximum opacity readings above 10 or 20 percent, in most cases, the EPA does not have any information that explains why the opacity readings were high on those particular days. In most cases, the EPA is unable to determine the cause of the higher values based on the data and information we have. Therefore, the EPA is not finalizing any changes to the opacity limits for the BOPF Shop in this final action. Instead, the EPA intends to continue reviewing and analyzing the opacity data from both the BF casthouse and the BOPF shop that we have and also collect additional data in the near future so that the EPA can gain a better understanding of the achievability of various opacity levels and the reasons why opacity levels are sometimes elevated. After EPA completes this additional data gathering and analyses, the EPA intends to consider potential revisions to the opacity limits in a separate future action. Until further revision, the opacity limit in the NESHAP for BOPF Shops will remain at 20 percent based on 3-minute averages, and the opacity limit in the NESHAP for BF casthouses will remain at 20 percent based on 6-minute averages, consistent with the current regulation.

The EPA is still finalizing opacity testing requirements for BF casthouse and BOPF shop fugitives as well as the proposed work practice standards for BOPF shop fugitives which are expected to reduce HAP emissions by 25 tpy. This accounts for 39% of the estimated emission reductions from UFIP sources with this promulgation.

Comment: One commenter stated that the EPA's reliance on the limited 2022 CAA section 114 testing results to determine that a 5 percent opacity standard would be achievable by BOPF shops for relatively modest capital and annual operating costs was inappropriate and has led the EPA to propose a standard that is technically and economically infeasible to meet. In an appendix to their comments, the commenters put forward alternative emission factors and cost estimates that, in their view, indicate the proposed standards would cost $88 million per ton to reduce just 2.6 tpy of HAP emissions industrywide. This conclusion is very different from the EPA's own analysis of its proposed rule, which was based on an assumption that no capital expenditures would be needed, and that for less than $500,000 per year industry-wide, all 11 existing BOPF shops should be able to meet a 5 percent opacity standard and comply with the numerous proposed work practice standards. Commenters also said that BOPF shops would not be able to meet a 5 percent opacity standard based on 3-minute averages from every opening at all times without significant capital expenditures, and remain concerned that even with this level of spending, there may be times when the shops would not be able to meet that standard. Commenters stated that until the EPA can demonstrate through a robust engineering study that the proposed opacity limit would be achievable at a certain spending level and with certain technology in place that is reasonable and cost-effective, the EPA should not move forward to finalize the proposed standards.

Response: As stated in previous responses to comments in this preamble, the EPA is not finalizing any changes to the opacity limits for the BOPF Shop in this final action. See previous responses to comments in this preamble for further explanation.

Comment: Commenters stated that because the proposal establishing an absolute 5 percent limit did not take into account the range of operations or impacts resulting in variability, it is clear that some periods of operation above 5 percent opacity will occur even with proper operation. They believe that any proposal that includes an opacity standard lower than 20 percent must provide that compliance is achieved provided there are no more than a set number of excursions above the revised limit in order to capture normal fluctuation events that occur during normal operation. Specifically, the EPA should follow the form of the current ''new source'' BOPF shop MACT opacity standard: maintain the opacity (for any set of 6-minute averages) of secondary emissions that exit any opening in the BOPF shop or other building housing a BOPF or shop operation at or below 15 percent, except that 6-minute averages greater than 15 percent but no more than 20 percent may occur twice per steel production cycle. A steel production cycle is defined in 40 CFR 63.7822.

Response: As stated in previous responses to comments in this preamble, the EPA is not finalizing any changes to the opacity limits for the BOPF Shop in this final action. The opacity limit for existing BOPF Shops will remain at 20 percent based on 3-minute averages. See previous responses to comments in this preamble for further explanation.

3. What are the revised standards for the BF casthouse and BOPF shop standards and how will compliance be demonstrated?

a. BF Casthouse

As stated in previous responses to comments in this preamble, the EPA is not finalizing any changes to the opacity limits for the BF casthouse in this final action. Facilities will need to comply with the 20 percent opacity limits that are already in the NESHAP. However, the EPA is requiring more frequent Method 9 tests as explained elsewhere in this preamble. See previous responses to comments in this preamble for further explanation.

b. BOPF Shop

For the reasons discussed in the responses to comments above, we are finalizing work practice standards for the BOPF. Specifically, in this final rule, we are requiring facilities to do the following: (1) keep all openings, except roof monitors (vents) and other openings that are part of the designed ventilation of the facility, closed during tapping and material transfer events (the only openings allowed during these events are the roof vents and other openings or vents that are part of the designed ventilation of the facility) to allow for more representative opacity observations from a single opening; (2) have operators conduct regular inspections of BOPF shop structure for unintended openings and leaks; (3) optimize positioning of hot metal ladles with respect to hood face and furnace mouth; (4) monitor opacity twice per month from all openings, or from the one opening known to have the highest

opacity, for a full steel cycle, which must include a tapping event; and (5) develop and operate according to an Operating Plan to minimize fugitives and detect openings and leaks.

The purpose of the Operating Plan is to address variability in unit design and operations by creating an individualized strategy for implementing work practice standards at each source. Owners and operators can develop specific work practices that make sense for each unit and that maximize emission reduction efficiency for each unit. We require that the BOPF Shop Operating Plan include:

• An explanation regarding how the facility will address and implement the four specific work practices listed above;

• A maximum hot iron pour/charge rate (pounds/second) for the first 20 seconds of hot metal charge (*i.e.,* the process of adding hot iron from the BF into the basic oxygen process furnace);

• A description of operational conditions of the furnace and secondary emission capture system that must be met prior to hot metal charge, including:

• A minimum flowrate of the secondary emission capture system during hot metal charge;

• A minimum number of times, but at least once, the furnace should be rocked between scrap charge and hot metal charge;

• A maximum furnace tilt angle during hot metal charging: and;

• An outline of procedures to attempt to reduce slopping.

The BOPF shop work practice standards and Operating Plan are expected to result in the same HAP emission reductions as the Proposed Rule at 25 tpy. This accounts for 39% of the estimated emission reductions from UFIP sources with this promulgation.

C. What are the decisions for fenceline monitoring?

1. What did we propose for fenceline monitoring?

Pursuant to CAA section 112(d)(6), we proposed adding fenceline monitoring for chromium. Fenceline monitoring refers to the placement of monitors along the perimeter of a facility to measure pollutant concentrations. Coupled with requirements for root cause analysis and corrective action upon triggering an actionable level, this work practice standard is a development in practices considered under CAA section 112(d)(6) for the purposes of managing fugitive emissions. The measurement of these pollutant concentrations and comparison to concentrations estimated from mass emissions via dispersion modeling can be used to ground-truth emission estimates from a facility's emissions inventory. If concentrations at the fenceline are greater than expected, the likely cause is that there are underreported or unknown emission sources affecting the monitors. In addition to the direct indication that emissions may be higher than inventories would suggest, fenceline monitoring provides information on the location of potential emissions sources. Further, when used with a mitigation strategy, such as root cause analysis and corrective action upon exceedance of an action level, fenceline monitoring can be effective in reducing emissions and reducing the uncertainty associated with emissions estimation and characterization. Finally, public reporting of fenceline monitoring data provides public transparency and greater visibility, leading to more focus and effort in reducing emissions.

Specifically, we proposed that facilities must install four ambient air monitors at or near the fenceline at appropriate locations around the perimeter of the facility, regardless of facility size, based on a site-specific plan approved by the EPA to collect and analyze samples for total chromium every sixth day. In addition, we proposed that facilities must implement the following work practice requirement: if an installed fenceline monitor has a 12-month rolling average delta c concentration—calculated as the annual average of the highest sample value for a given sample period minus the lowest sample value measured during that sample period—above the proposed action level of 0.1 µg/m^3 for total chromium, the facility must conduct a root cause analysis and take corrective action to prevent additional exceedances. Data would be reported electronically to the EPA's Compliance and Emissions Data Reporting Interface (CEDRI) on a quarterly basis and subsequently available to the public via the Web Factor Information Retrieval system (WebFIRE) website. Furthermore, we proposed a sunset provision whereby if the annual average delta c remain 50-percent or more below the action level (*i.e.,* 0.05 µg/m^3 or lower) for a 24-month period, then the facility can request to terminate the fenceline monitoring. Termination of the fenceline monitoring in no way impacts the requirement for facilities to meet all other obligations under this subpart including the general duty to minimize emissions of 40 CFR 63.7810(d).

Because a method has not yet been proposed or promulgated for fenceline monitoring of metals, we proposed that fenceline monitoring would begin no later than one year after the EPA's promulgation of a fenceline test method, or two years after the promulgation of the final rule, whichever is later. The EPA is working as expeditiously as possible to propose a new metals fenceline method. As part of the prior CAA section 114 information collection effort, we relied on a common ambient monitoring method [2] for the collection of the metals samples and associated analytical method [3] for multi-metals for the analysis. While these methods are robust and appropriate for ambient trends applications, EPA needs to further investigate and revise these approaches for a stationary source regulatory program to ensure improved precision and accuracy in the method, in the same manner EPA developed Method 327 [4] from TO–15 in the recent Synthetic Organic Chemical Manufacturing Industry: Organic National Emission Standards for Hazardous Air Pollutants (NESHAP)—40 CFR 63 Subparts F,G,H,I proposed rule, published on April 25, 2023 (88 FR 25080). The required determinations of whether the action level has been exceeded and any subsequent root cause investigation will begin once the first annual rolling average is acquired.

2. What comments did we receive on the monitoring requirements, and what are our responses?

Comment: Commenters stated that the proposed focus on chromium as a ''surrogate'' and the proposal to set an action level for only chromium is demonstrably inadequate. Emission standards under CAA section 112(d) must be ''comprehensive controls for each source category that must include limits on each hazardous air pollutant the category emits.'' (*LEAN,* 955 F.3d at 1095–96.) As identified in several background documents for this proposed rule, air pollutants from various facility processes include multiple toxic metals in addition to chromium including arsenic, mercury, and lead; toxic halogenated compounds including carbonyl sulfide, carbon disulfide, hydrogen chloride, hydrogen fluoride, D/F; and other toxic pollutants such as hydrocarbons and PM. The CAA requires ''as many limits as needed to control all the emitted air toxics of a

[2] Reference Method for the Determination of Suspended Particulates in the Atmosphere (High Volume Method), 40 CFR 50, Appendix B.

[3] Method IO–3, Determination of Metals in Ambient Particulate Matter Using Inductively Coupled Plasma (ICP) Spectroscopy.

[4] **Federal Register** Notice published on April 25, 2023 (88 FR 25080).

particular source category.'' (*Id.* at 1097.) Commenters stated that the 2023 Proposal is unlawful on its face for only requiring monitoring and action level standards for chromium.

Response: The EPA disagrees that conducting fenceline monitoring for only chromium is inadequate or unlawful. The EPA recognizes there are multiple toxic metals emitted by various facility processes from the iron and steel facilities. We reiterate that we did not intend to measure all pollutants, especially pollutants that are emitted from point sources that are directly measurable through source tests and continuous monitoring systems. These emissions sources and pollutants are subject to other standards under these MACT. We disagree that it is necessary to conduct fenceline monitoring for every HAP emitted from fugitive emission sources at integrated iron and steel facilities. Integrated iron and steel emissions can contain many different HAP and it is very difficult for any fenceline method to detect every HAP potentially emitted from integrated iron and steel facilities. The fenceline monitoring standard was proposed as part of the CAA section 112(d)(6) technology review to improve management of fugitive emissions of metal HAPs and not as a risk reduction measure. In order to meet that goal of improved management of fugitive emissions, it is not necessary to obtain an accurate picture of the level of all HAP emitted. We chose to propose fenceline measurements only for chromium because it was a risk driver in the 2020 RTR analyses and has been determined to be a good surrogate for other HAP metals, especially arsenic, which was the other HAP metal driving the risks in the 2020 RTR risk analyses. Additionally, at the fenceline, based on fenceline monitoring conducted in 2022–23 at Integrated Iron and Steel facilities in response to the section 114 request, the highest monitored lead levels were found to be 5 times lower than the current air quality health NAAQS value (last issued in 2015 to provide an ''adequate margin of safety to protect public health''). However, based on a lack of information on fugitive lead and other metal HAP emissions, the EPA does agree with this commenter that there is a need for more data gathering, both at the fenceline and from other sources on the facilities. EPA did not propose nor are we prepared to promulgate a requirement to monitor any metals other than chromium as part of the fenceline requirement, but we intend to gather more fenceline monitoring data for lead in 2024 at Integrated Iron and Steel facilities to better characterize fugitive lead emissions. Additionally, we intend to gather more data regarding HAP metals from sinter plant stacks through the use of PM continuous monitoring systems (PM CEMs). We intend to collect this data in a separate action under CAA section 114 that will follow this final rule.

Comment: Commenters stated that the EPA should require monitoring and set action level standards for all HAP metals emitted by II&S facilities. These commenters asserted that the incremental cost to monitor for all metals is insignificant and would have outsized benefits to the community by establishing multiple triggers for assessment and corrective action. As an alternative to required fenceline monitoring for all HAP metals, commenters stated the EPA should consider implementing a fenceline standard for lead because most communities surrounding II&S facilities are EJ communities exposed to lead from multiple sources. Commenters also specifically supported a fenceline monitoring requirement for arsenic.

Response: The EPA observes that it is technically feasible to require further speciation of metal HAPs collected within a single sample. Although increasing the analyte list does increase the analytical costs because additional calibration standards are required, the EPA agrees with commenters that the costs to monitor for additional metals would be relatively low. However, the incremental cost of monitoring for additional HAPs is not the only consideration in determining the scope of a fenceline monitoring requirement for this source category. The EPA must also consider the efficacy of instituting a fenceline monitoring requirement for additional HAPs, as well as practical implementation concerns. At this time, the EPA believes these factors weigh in favor of requiring fenceline monitoring for chromium while continuing to gather information on other metal HAPs.

As discussed above, the EPA previously determined in the 2020 RTR that chromium is one of the two principal drivers of health risk in this source category and is also an effective surrogate for arsenic, which is the other most significant contributor to risk. Because the principal purpose of fenceline monitoring in this source category is to assure compliance with the emission standards that address fugitive emissions of particulate HAP metals, implementing this development will provide ''necessary'' protection against fugitive emissions of metal HAPs (including those that pose greatest risks to public health). Fenceline monitoring is a development in practices, for the purpose of managing fugitive emissions. In sum, fenceline monitors will be placed at or near the perimeter of the applicable facility to measure pollutant concentrations; this measurement is coupled with the requirement to conduct applicable root cause analyses and implement corrective action upon triggering an actionable level. The utilization of fenceline monitors will serve to manage fugitive emissions with the intent to reduce emissions, as well as to reduce uncertainty associated with initial emissions estimation. The use of fenceline monitors, coupled with action levels, represents a development in work practices. Therefore, focusing fenceline monitoring requirements on chromium is appropriate as a development pursuant to CAA section 112(d)(6). Requiring fenceline monitoring for chromium alone also facilitates establishing an appropriate action level, reduces analytical costs, and simplifies the determination of compliance for integrated iron and steel owners and operators.

By contrast, including additional metal HAPs in the fenceline monitoring program would require the EPA to resolve a number of technical issues, including how an action level for additional HAPs would be set, and whether each metal HAP would have its own action level or instead a single action level for the sum of metal HAP measured. The EPA was not able to develop the information needed to address these issues within the timeframe for this rulemaking. Given that the available information indicates that HAP metals emitted from the integrated iron and steel facilities other than chromium and arsenic do not contribute to significant ambient concentrations at or near the facility boundaries (*e.g.,* fenceline) at these facilities, we have determined that at present the benefits of including other metal HAPs in the scope of the fenceline monitoring requirement are also unclear.

Although we did not propose nor are we prepared to promulgate a fenceline monitoring requirement for any metals other than chromium at this time, the EPA recognizes that further information on fugitive emissions of lead and other HAP metals would be useful in informing whether and how a fenceline monitoring requirement for additional HAP metals as part of a future rulemaking. Accordingly, we intend to gather more data to better characterize fugitive lead and other HAP metals through a separate action that will

follow this final rule as described in the previous response in this preamble.

Comment: Commenters stated that the EPA should not set an action level that would be triggered if the UFIP sources were meeting all of the proposed opacity limits and work practice standards, which is the EPA's stated purpose for establishing the fenceline monitoring program. Because the EPA did not consider or analyze whether II&S facilities could maintain UFIP emissions at rates to ensure that the action level would not be triggered or how much it would cost to maintain emissions below the action level, the EPA should not entertain these lower values of 0.08 and 0.09 μg/m³. Commenters stated that for the EPA to do so would be arbitrary and capricious per se.

Response: The EPA acknowledges the support and is finalizing the action level at 0.1 μg/m³ as proposed.

Comment: Commenters stated that regardless of the numeric value selected for the action level, the EPA should express the chromium action level in μg/m³ to at least two decimal places and clarify that rounding occurs to the second decimal place (*e.g.,* 0.11 μg/m³ would not round down to 0.10 μg/m³ and would therefore exceed the action level). The EPA states that ''[b]ecause of the variability and limitations in the data, to establish the proposed action level we rounded[. . .]to one significant figure (*i.e.,* 0.1 μg/m³).'' Commenters stated that there are two issues with this statement: (1) significant figures do not completely characterize numerical precision, and (2) reporting chromium concentrations in μg/m³ to one decimal place does not reflect the precision of modern sampling and analytical techniques. Commenters stated that in response to the first point, consider two hypothetical reported chromium concentrations: 0.1 μg/m³ and 0.01 μg/m³. Both have only one significant digit, but the second concentration is reported with a greater level of precision. As for the second point, Table 1 in EPA Compendium Method IO–3.5, which was the analytical method used to determine fenceline chromium concentrations as part of the EPA's CAA section 114 ICR, lists the estimated method detection limit for chromium as 0.01 ng/m³ (0.00001 μg/m³). This low method detection limit demonstrates the sensitivity and precision of modern sampling and analytical methods. As such, chromium concentrations measured with these methods should be reported to at least two decimal places (assuming units of μg/m³).

Response: The EPA disagrees with the commenter that more than one decimal place should be used for the action level and further disagrees with their definition of precision. Measurement precision relates to the degree of variation in repeated measurements, and not what decimal place a reading is. In the example proposed, 0.1 μg/m³ and 0.01 μg/m³, these are merely two values of differing magnitude, and not two values of different precision.

The EPA also disagrees that the detection limit of EPA Compendium Method IO–3.5 has meaning in this context. The detection limit is the lowest level at which a valid measurement can be collected, beyond indicating that, in this case, the measured values are within the measurable range, it has no practical impact upon the number of significant digits appropriate.

While the analytical techniques may be able to determine the concentration out to more than one significant figure, the setting of the action level is based not just upon the measurement itself, but upon projected gains under the newly required limits on UFIP and the calculation of delta c, further complicating the determination of an appropriate action level. The EPA is finalizing the action level at one significant figure as proposed.

Comment: Commenters stated that even if the EPA can sufficiently explain why an action level was set for chromium for II&S facilities based on fenceline monitoring, the EPA should set the action level below 0.1 μg/m³ because fenceline data collected as part of EPA's CAA section 114 collection request shows that a lower action level is achievable. Because the EPA did not request that all eight II&S facilities perform fenceline monitoring pursuant to the CAA section 114 request, the EPA did not identify the top five best performing facilities. However, two of the four facilities that conducted fenceline monitoring (Cleveland Works and Burns Harbor) had 6-month chromium delta c averages below 0.08 μg/m³, and a third facility (Granite City) is projected to be at 0.09 μg/m³ after implementing provisions of the rulemaking. The EPA has failed to explain why they are requiring an action level that constitutes the lowest number (0.1 μg/m³) instead of the level that three of the four facilities that conducted fenceline monitoring are able to meet (0.10 μg/m³). Accordingly, the EPA should set the action level below 0.1 μg/m³.

Response: Consistent with refineries and all other proposed fenceline monitoring standards, we are implementing the action level as a single significant digit as discussed further in the response to the previous comment of this section.

3. What are the revised standards for the fenceline monitoring requirements and how will compliance be demonstrated?

We are finalizing what we proposed: facilities must install four ambient air monitors at or near the fenceline at appropriate locations around the perimeter of the facility based on a site-specific plan that must be submitted to and approved by the EPA, regardless of facility size. These monitors shall collect and analyze samples for total chromium every sixth day. The facilities must also implement the following work practice requirement: if an installed fenceline monitor has a 12-month rolling average delta c concentration that is above the action level of 0.1 μg/m³ for total chromium, calculated as the annual average of the delta c determined during each sample period over the year (highest sample value for a given sample period minus the lowest sample value measured during that sample period), the facility must conduct a root cause analysis and take corrective action to prevent additional exceedances.

A facility may request to terminate fenceline monitoring after 24 months of consecutive results 50 percent or more below the action level. The EPA selected the monitoring locations and sampling frequency as specified to maintain the same basis of monitoring as that used in the derivation of the action level as discussed in the preamble to the proposed rule (88 FR 49414). The use of four monitors was selected and not expanded to the same number of monitoring sites as EPA Method 325A because, unlike EPA Method 325A that uses passive samplers, the methodology used for both the CAA section 114 request and the potential candidate method for this rule requires power at each sampling location, dramatically increasing the potential cost of each monitoring site. The sampling frequency of every six days was selected to both mimic that of the CAA section 114 request as well as to ensure operations on each day of the week would be represented in the calculation of the annual average delta c. Data will be reported electronically to CEDRI on a quarterly basis and subsequently available to the public via the WebFIRE website.

In response to many comments regarding fugitive emissions of lead and other metals, we recognize the need to gather more data to characterize these fugitive emissions at the fenceline and sinter plants. We intend to take a separate action on this data collection

for lead and potentially other metals action under CAA section 114.

D. Standards To Address Unregulated Point Sources for Both New and Existing Sources

1. What standards did we propose to address unregulated point sources?

In addition to the unregulated UFIP sources, we identified five unregulated HAP from sinter plant point sources (CS_2, COS, HCl, HF, and Hg); three unregulated HAP from BF stove and BOPF point sources (D/F, HCl and THC (as a surrogate for organic HAP other than D/F)); and two unregulated HAP from BF point sources (HCl and THC (as a surrogate for organic HAP other than D/F). The proposed MACT emission limits for these unregulated point sources are in Table 3.

TABLE 3—ESTIMATED HAP EMISSIONS AND PROPOSED MACT LIMITS FOR POINT SOURCES

Process	HAP	Estimated source category emissions	Proposed MACT limit
Sinter Plants	CS_2	42 tpy	Existing and new sources: 0.028 lb/ton sinter.
Sinter Plants	COS	57 tpy	Existing sources: 0.064 lb/ton sinter. New sources: 0.030 lb/ton sinter.
Sinter Plants	HCl	11 tpy	Existing sources: 0.025 lb/ton sinter. New sources: 0.0012 lb/ton sinter.
Sinter Plants	HF	1.2 tpy	Existing and new sources: 0.0011 lb/ton sinter.
Sinter Plants	Hg	66 pounds/yr	Existing sources: 3.5e–5 lb/ton sinter. New sources: 1.2e–5 lb/ton sinter.
BF casthouse control devices.	HCl	1.4 tpy	Existing sources: 0.0013 lb/ton iron. New sources: 5.9e–4 lb/ton iron.
BF casthouse control devices.	THC	270 tpy	Existing sources: 0.092 lb/ton iron. New sources: 0.035 lb/ton iron.
BOPF	D/F (TEQ [1])	3.6 grams/yr	Existing and new sources: 4.7e–8 lb/ton steel.
BOPF	HCl	200 tpy	Existing sources: 0.078 lb/ton steel. New sources: 1.9e–4 lb/ton steel.
BOPF	THC	13 tpy	Existing sources: 0.04 lb/ton steel. New sources: 0.0017 lb/ton steel.
BF Stove	D/F (TEQ)	0.076 grams/year	Existing and new sources: 3.8e–10 lb/ton iron.
BF Stove	HCl	4.5 tpy	Existing sources: 5.2e–4 lb/ton iron. New sources: 1.4e–4 lb/ton iron.
BF Stove	THC	200 tpy	Existing sources: 0.1 lb/ton iron. New sources: 0.0011 lb/ton iron.

[1] Toxic equivalency.

2. What comments did we receive on the unregulated point sources, and what are our responses?

Comment: Commenters state that they submitted additional stack tests in Appendix L that cover the EPA's proposed MACT standards for BF Stoves, BF Casthouses, and BOPF Primary Control Devices. These commenters do not represent that the additional data submitted in Appendix L alone or in combination with data underlying the EPA's proposed standards capture the full range of operating conditions for these point sources; however, they believe these additional data further indicate that the EPA's limited datasets do not sufficiently account for variability and, therefore, are not representative of best performing units in this source category. The same commenters state that the EPA's 15 proposed HAP limits for new sources rely on insufficient data and are unlikely to be technologically feasible. They are also concerned that any new sources would also not be able to meet the emission rates of the best performers given the lack of sufficient data underlying the EPA's proposed new source limits for the 15 HAPs that inherently do not capture process, operational, raw material, or seasonal and measurement variability of the EPA-designated best performing source. Achievability of the new source proposed limits is a concern because it is also unlikely that it would be technologically feasible for pollution control equipment to guarantee any degree of control of such low or dilute concentrations of D/F, PAHs, COS, CS_2, Hg, THC, HF, and HCl, which fall below the lowest target concentrations and capture limitations of such equipment. Further, the sources of raw materials and their impact on emissions variability cannot be reasonably predicted.

Response: The EPA has considered these additional data and, where deemed valid, incorporated the data into updated UPL calculations for the point sources and HAPs. The promulgated limits are based on MACT floor calculations (UPL) using the available valid data, which represents our best estimate of current average performance, accounting for variability (*i.e.,* UPL calculations), of the sources for which we have valid data (for affected sources). Additionally, based on industry comments, we: (1) used surrogate limits for some HAP; (2) changed the format of some limits; and (3) established work practices for HAP where majority of data were below detection.

Furthermore, based on the limited data we have, we estimate that all facilities will be able to meet these limits without the need for new add-on control devices (*e.g.,* we have no data indicating a source cannot currently comply with these limits). Nevertheless, we acknowledge that there are uncertainties because of the limited data. However, pursuant to section 112 of the CAA and the LEAN court decision, we must promulgate MACT emissions limits based on available data in order to fulfill our court ordered CAA section 112(d)(6) obligations.

Comment: Commenters stated that if EPA nonetheless proceeds with BF Stove limits, the form must be revised to lb/MMBtu, and that EPA erroneously used iron, rather than steel, production rates. The commenter said the agency should use contemporaneous iron production rates instead, which were provided on May 25, 2023. Notwithstanding these errors, emission limits for combustion units including BF stoves would be most appropriately expressed as lb/MMBtu, as although stove and blast furnace operations are interrelated, there are significant site specific differences in operation which make blast furnace production inappropriate to use when developing a limit for BF stoves. Lb/MMBtu would be more appropriate because the emissions per amount of heat released is more directly related to total quantity of emissions generated. Further, gas flow can be directly measured to account for varying BF stove operation. Iron production is intermittent with tapping and plugging of the furnace, so using emissions per ton could produce misleading results and should not be used.

Response: The EPA agrees that BF stove emission limits in the units of lb/MMBtu would be more appropriate than

unis of lb/ton. We have recalculated UPLs for BF stove emissions in the units of lb/MMBtu and are finalizing MACT floor limits for HCl and THC emissions from BF stoves in the units of lb/MMBtu. No additional costs are expected to meet these limits.

Comment: Commentors stated that the EPA should not finalize its proposed D/F limit for BF Stoves because D/F is not present, or, if present, is only in trace amounts. The EPA estimates that the 17 BF Stoves in the source category collectively emit 0.076 grams per year of D/F. Commentors said that basing the proposed D/F limit on only two tests, with a total of only 6 data points (5 of which are BDL) is not permissible. If the EPA nevertheless pursues D/F limits for BF Stoves, the EPA should review and revise the limits to ones that are representative of the emissions limitations being achieved by the best performers. The EPA should consider work practices, such as good combustion practices, in lieu of numerical limits.

Response: Pursuant to the LEAN decision, CAA section 112(d)(2)/(3) and the court order for the EPA to complete this final rule pursuant to CAA section 112(d)(6) by March 11, 2024, the EPA must establish standards for previously unregulated HAP based on available data in this final rule. The EPA collected emissions test data through the CAA section 114 requests. For D/F from BF stoves, when we made a determination of BDL according to the procedures outlined in Determination of ''non-detect'' from EPA Method 29 (multi-metals) and EPA Method 23 (dioxin/furan) test data when evaluating the setting of MACT floors versus work practice standards (Johnson 2014) (Johnson memo) available in the docket (EPA–HQ–OAR–2002–0083–1082), two of the six runs are determined to be non-detect. Though we disagree in the number of non-detect values with the commenter, we agree that, as only 33 percent of test runs were detected values, a work practice under CAA section 112(h) is appropriate for the control of D/F from BF Stoves. The EPA generally considers a work practice to be justified if a significant majority of emissions data available indicate that emissions are so low that they cannot be reliably measured (*e.g.,* more than 55 percent of test runs are non-detect) as discussed in the Johnson Memo. An appropriate work practice for D/F for the stoves, due to their similarity in operation with boilers and other heaters, is good combustion practices, represented for this source by the THC standard being finalized in this rule. The numerical THC standard provides assurance of good combustion practices, and a further tune-up style work practice requirement is not necessary.

Comment: Commentors stated that the EPA should not finalize its proposed CS_2 and HF limits for sinter/recycling plants because the available data demonstrates these pollutants are not emitted. The EPA estimates sinter/recycling plants emit: a total 1.3 tpy of HF and 23 tpy of CS_2 for the source category. The EPA bases its CS_2 estimate on a limited data set of six test runs where the EPA flagged 83 percent (5 out of 6) of those results as below detection limit (BDL). (2023 Data Memo at app. A) BDL means that emissions are so low they are not able to be accurately read, measured, or quantified. Similarly, 13 out of 14 (93 percent) of test runs for HF from sinter/recycling plants were flagged BDL by the EPA, indicating that HF is not emitted or emitted in trace amounts, and thus EPA should not set a numerical standard for HF for sinter/recycling plants. The commentor stated if the EPA nevertheless proceeds with such numerical limits, it must revise its proposed limits upwards to help to account for known data variability and limited datasets. Commentors stated that data underlying the EPA's proposed CS_2 and HF limits includes a significant number of readings below the detection limit. The EPA explains that ''greater than 50 percent of the data runs were BDL'' for HF and CS_2 from sinter/recycling plants. (2023 MACT Costs Memo at 19–21, tbl. 24.) The proposed limits for HF and CS_2 are not representative of current performance due to the frequency of near or BDL. The EPA has noted that ''section 112(d)(2) of the CAA specifically allows EPA to establish MACT standards based on emission controls that rely on pollution prevention techniques.'' Where a majority of BDL values exist, the EPA should instead consider pollution control techniques, such as a work practice, rather than individual limits for these HAPs. Thus, the EPA should rely on the oil-content and VOC limit pollution control techniques that are already in place for these pollutants.

Response: Pursuant to the LEAN decision, CAA section 112(d)(2)/(3) and the court's Order for EPA to complete this final rule pursuant to CAA section 112(d)(6) by March 11, 2024, the EPA must establish standards for previously unregulated HAP based on available data in this final rule. The EPA reviewed the data in question and agrees with the commenter's assessment of the number of non-detect results for CS_2 and HF. Further, the single test run for which HF was detected was only slightly above the detection limit (0.09 ppmv detected value versus the detection limit of 0.08 ppmv). The EPA generally considers a work practice to be justified if a significant majority of emissions data available indicate that emissions are so low that they cannot be reliably measured (*e.g.,* more than 55 percent of test runs are non-detect) as discussed in the Johnson Memo. Due to the extremely high percentage of non-detect values, 83 and 93 percent for CS_2 and HF respectively, it is appropriate for both of these compounds at the sinter plant to be represented by a work practice standard according to CAA section 112(h). For CS_2, the work practice being finalized consists of the existing requirement to control the oil content in the sinter or the VOC emissions at the windbox exhaust (40 CFR 63.7790(d)) to control the source of the sulfur, combined with the new numerical standard for COS being finalized in this rulemaking. For HF, where 93 percent of the values were below the detection limit and the only detected value is only slightly above, the numerical standard for HCl being finalized in this rule shall act as a work practice (or surrogate) for HF, as control of HCL will also control HF.

3. What are the revised standards for the unregulated point sources and how will compliance be demonstrated?

We are finalizing the MACT Floor emission limits mostly as we proposed, but with minor adjustments for some limits based on the inclusion of additional valid data in the UPL calculations, the revision of the format of BF Stove emission limits as advised in the comments received, and the incorporation of work practices and surrogates for CS_2 and HF at sinter plants and D/F from the BF Stove. These work practices are being finalized because under CAA section 112(h), the Administrator has determined that it is not feasible to prescribe or enforce an emissions standard for these unregulated point sources. Furthermore, based on consideration of public comments and further analyses, for mercury emissions from existing sinter plants, we are promulgating a BTF limit based on installation and operation of activated carbon injection (ACI), described in section III.E of this preamble. The emission limits, along with estimated annual emissions, for the unregulated point sources for the final rule are provided in Table 4.

TABLE 4—HAP EMISSIONS AND FINAL MACT LIMITS FOR PREVIOUSLY UNREGULATED POINT SOURCES

Process	HAP	Estimated source category emissions	Promulgated MACT emissions limit (or other applicable standard as noted below)
Sinter Plants	CS_2	23 tpy	Meet applicable COS limit and meet requirements of 40 CFR 63.7790(d).
Sinter Plants	COS	72 tpy	Existing sources: 0.064 lb/ton sinter. New sources: 0.030 lb/ton sinter.
Sinter Plants	HCl	12 tpy	Existing sources: 0.025 lb/ton sinter. New sources: 0.0012 lb/ton sinter.
Sinter Plants	HF	1.3 tpy	Meet the applicable HCl standard.
Sinter Plants	Hg	55 pounds/yr	Existing sources: 1.8e–5 lb/ton sinter.[2] New sources: 1.2e–5 lb/ton sinter.
BF casthouse control devices.	HCl	1.4 tpy	Existing sources: 0.0056 lb/ton iron. New sources: 5.9e–4 lb/ton iron.
BF casthouse control devices.	THC	270 tpy	Existing sources: 0.48 lb/ton iron. New sources: 0.035 lb/ton iron.
BOPF	D/F (TEQ[1])	3.6 grams/yr	Existing and new sources: 9.2e–10 lb/ton steel.
BOPF	HCl	200 tpy	Existing sources: 0.058 lb/ton steel. New sources: 2.8e–4 lb/ton steel.
BOPF	THC	13 tpy	Existing sources: 0.04 lb/ton steel. New sources: 0.0017 lb/ton steel.
BF Stove	D/F (TEQ)	0.076 grams/year	Good combustion practices demonstrated by meeting the THC limit.
BF Stove	HCl	4.5 tpy	Existing sources: 0.0012 lb/MMBtu. New sources: 4.2e–4 lb/MMBtu.
BF Stove	THC	200 tpy	Existing sources: 0.12 lb/MMBtu. New sources: 0.0054 lb/MMBtu.

[1] Toxic equivalency.
[2] See section III.E for description of the final mercury limit.

E. Reconsideration of Standards for D/F and PAH for Sinter Plants Under CAA Section 112(d)(6) Technology Review, and Beyond-the-Floor Limit for Mercury

1. What standards did we propose to address the reconsideration of the D/F and PAH standards for sinter plants, and new mercury limits from sinter plants?

We proposed emissions limits of 3.5E–08 lbs/ton of sinter for D/F toxic equivalency (TEQ) and 5.9E–03 lbs/ton of sinter for PAHs for existing sinter plant windboxes. These limits reflect the average current performance of the four existing sinter plants for D/F and PAHs pursuant to CAA section 112(d)(6). For mercury, we proposed a MACT Floor limit of 3.5E–05 lbs/ton sinter for existing sources, as described in section III.D of this preamble.

For new sources, we proposed emissions limits of 3.1E–09 lbs/ton of sinter for D/F (TEQ), and 1.5E–03 lbs/ton of sinter for PAHs for new sinter plant windboxes that reflect the current performance of the one best performing sinter plant pursuant to CAA section 112(d)(6). Regarding mercury, we proposed a MACT floor limit of 1.2E–05 lbs/ton sinter for new sinter plants.

2. What comments did we receive on the reconsideration of the D/F and PAH standards for sinter plants, and mercury emissions, and what are our responses?

Comment: Commenters stated that the Agency's review of ACI during the 2020 RTR found that the ACI add-on control technology for sinter/recycling plant windboxes would not be cost-effective. They said the Agency's BTF analysis and evaluation of ACI as a potential control option for sinter/recycling plants are flawed. Commenters said that they are unaware of any application of ACI with a wet scrubber for particulate control being sufficiently demonstrated in practice as a control technology for D/F. Commenters also assert that the assumed brominated powdered activated carbon (PAC) injection rate of 1.7 lb/MMacf based on 2012 test data from the Gerdau Sayreville, NJ electric arc furnace baghouse is unproven in the II&S industry and that the Agency may be underestimating the required injection rates.

Response: Based on our review of the available information and analyses, we estimate the brominated powdered activated carbon (PAC) can achieve 85 percent reduction of D/F when used with fabric filters. Regarding wet scrubbers, based on a scientific article by H.Ruegg and A. Sigg (See ''Dioxin Removal In a Wet Scrubber and Dry Particulate Removal'', Chemosphere, Vol. 25, No. 1–2, p. 143–148), we estimate ACI used with a wet scrubber will achieve 70 percent reduction. Given that PAHs and dioxins are both semi-volatile organic compounds, we assume the ACI with a wet scrubber will also achieve 70 percent reduction of PAHs from sinter plants with a wet scrubber. We note that only one of the 4 sinter plants is controlled with a wet venturi scrubber. The other three have baghouses.

Comment: Commenters stated the EPA's MACT limits for existing sinter plants should be lower, arguing that the EPA's establishment of separate MACT floors for COS, HCl, and mercury for new plants at less than half of the limit for existing sources indicates how outdated the 50 plus year-old existing sinter plants are. Commenters argued that the fact that only two integrated steel mills continue to operate sinter plants, down from nine facilities twenty years ago, further suggests that American sinter technology is outdated. In commenters' view, the EPA should not give these outdated sinter plants a ''pass'' on reducing their significant emissions of hazardous air pollutants.

Commenters further stated that the EPA should reconsider rejecting ACI as too expensive, arguing that steel mills can clearly afford this control measure based on recent profit margins. The EPA should more carefully consider an evaluation of the human health costs associated with the HAP emissions and factor that into the Agency's cost estimate. Alternatively, the commenters urged EPA to consider advanced or additional pollution controls on sinter windboxes, the most significant source of emissions from sinter plants. The proposed NESHAP does not appear to have considered the use of wet electrostatic precipitators, redundant baghouses, or other types of controls.

Response: To address the comments that sinter plants need more controls to reduce emissions of hazardous pollutants, specifically the addition of ACI controls, we are finalizing emissions limits pursuant to CAA section 112(d)(6) for D/F and PAHs, and CAA section 112(d)(2)/(3) BTF limits for mercury that reflect the installation and operation of ACI controls. We conclude that the estimated costs for these ACI controls (described below) are reasonable given that these controls will achieve significant reductions of these three HAPs, which are persistent, bioaccumulative and toxic (PBT) HAPs. For example, D/F are highly toxic carcinogens that bioaccumulate in various food sources such as beef and dairy products. Mercury, once it is converted to methylmercury in aquatic

ecosystems, is also known to bioaccumulate in some food sources, especially fish and marine mammals which are consumed by people, especially people who rely on subsistence fishing as an important food source. Methylmercury is a potent developmental neurotoxin, especially for developing fetuses. The PAHs are a subset of the polycyclic organic matter (POM), which are a group of HAP that EPA considers to be PB–HAP, and includes some known or probable carcinogens such as benzo-a-pyrene.

3. What are the revised standards for the D/F, PAH and mercury for sinter plants, and how will compliance be demonstrated?

Based on the comments received, we are finalizing emissions limits that reflect the installation and operation of ACI controls, which are emissions limits of 1.1E–08 lbs/ton of sinter for D/F (TEQ), 1.8E–03 lbs/ton of sinter for PAHs, and 1.8E–05 lbs/ton for mercury for existing sinter plant windboxes. Regarding new sources, we are promulgating limits of 1.1E–08 lbs/ton of sinter for D/F (TEQ), 1.5E–03 lbs/ton of sinter for PAHs, and 1.2E–05 lbs/ton for mercury for new sinter plant windboxes. The application of this ACI will achieve significant reductions of mercury, D/F and PAH emissions, important reductions given that all three HAP are highly toxic, persistent, bioaccumulative HAP (PB–HAP), as described above. We estimate these limits for the three separate HAP will result in total combined capital costs of $950K, annualized costs of $2.3M, will achieve 8 grams per year reductions of D/F TEQ emissions, 5.4 tpy reduction in PAHs, and 47 pounds of mercury. The estimated cost effectiveness (CE) for each HAP individually are: CE of $287K per gram D/F TEQ, $426K per ton of PAHs, and $49,000 per pound for mercury.

If the EPA evaluated these emissions limits individually (*i.e.,* without consideration of the co-control of D/F, PAHs and mercury), the EPA might have reached a different conclusion (*e.g.,* maybe not promulgated one or more of the individual final limits due to costs and cost effectiveness). For example, historically, EPA has accepted cost effectiveness for mercury up to about $32,000 per pound. Regarding the D/F and PAHs, we have not identified cost effectiveness values that have been accepted in the past as part of revising standards under EPA's technology reviews pursuant to CAA section 112(d)(6).

However, given that ACI is expected to be needed to achieve the limits for all three HAP (D/F, PAHs and mercury), as described previously in this section, we determined, similar to how we group non-Hg HAP metals when evaluating cost effectiveness, that it is appropriate to consider these three HAP as a group because they would be controlled by the same technology. We note that the Hg cost-effectiveness value is within a factor of 2 of values that we have accepted, and that these three HAP are persistent and bioaccumulative in the environment. Given that ACI is required to achieve the limits for all three PB–HAP (D/F, PAHs and mercury), as described previously in this section, we decided it was appropriate to establish these limits for these three HAP that reflect application of ACI. Because these three pollutants are PB–HAP, as described in more detail in response above, we conclude the estimated costs are reasonable, especially given that these annual costs are far less than 1 percent of revenues for the parent companies, which is discussed further in the economic impacts section of this preamble (see section IV.D).

F. Other Major Comments and Issues

Comment: Commenters stated the EPA's 2023 Proposal for II&S facilities poses many challenges to the domestic iron and steel manufacturing industries. They stated when taken in conjunction with other onerous EPA regulations, including the proposed revisions to the NAAQS for PM, the 2023 Taconite Risk and Technology Review proposal and the 2023 Coke Ovens and Pushing, Quenching, and Battery Stacks Risk and Technology Review proposal, the domestic II&S manufacturers will incur significant cost and will struggle to meet these additional, infeasible standards. They stated it is critical that the EPA understand this 2023 Proposal significantly jeopardizes the potential successes of the Bipartisan Infrastructure Law (BIL) and the Inflation Reduction Act (IRA), and, as a result, undercut the decarbonization priorities of the administration.

Commenters acknowledged the iron and steel industry faces significant impacts from the 2023 Proposal along with other EPA proposed rules including the Taconite MACT, the Coke MACT, the Good Neighbor Rule, and the $PM_{2.5}$ NAAQS. They stated their customers, coworkers, suppliers and themselves are concerned for the future of iron and steelmaking, an essential industry, in the U.S.

Commenters stated the regulations moving through the EPA at the current time are going to materially impact the Iron Range of Minnesota and the entire domestic steel industry. Commenters urged the EPA to be prudent and use caution before placing a single new regulation on these industries. Commenters asked the EPA to show favor in the Agency's decision making to the domestic iron and steel industry.

Response: As explained in the Regulatory Impact Analysis (RIA) and in section IV.D of this preamble, the projected economic impacts of the expected compliance costs of the rule are likely to be small. This rulemaking is estimated to cost less than 1% of the annual revenues of the parent companies. This rule should not be financially detrimental to the source category. See sections IV.C and IV.D of this preamble, and the RIA, for more details.

Comment: Commenters state that in 2020, the EPA conservatively determined that II&S source category risk was well below the acceptable levels established by the Congress and that existing standards are protective of public health with an ample margin of safety, and the proposal does not reopen or even question the EPA's conservative 2020 determination. As the proposal (briefly) recites, ''[i]n the 2020 final rule, the Agency found that risks due to emissions of air toxics from this source category were acceptable and concluded that the NESHAP provided an ample margin of safety to protect public health.'' (2023 Proposal) The EPA's decision not to revisit that conclusion confirms that the EPA supports the 2020 ample margin of safety determination and sees no reason for amendment. In fact, detailed corrected emission and modeling data show that the remaining risks are significantly smaller than even the low levels the EPA estimated in 2020.

Response: The EPA is revising the 2020 final rule to satisfy the *LEAN* decision, which requires the EPA to address any remaining unregulated sources of emissions from the iron and steel facilities. In meeting the requirements of this case law, the EPA collected more data to revisit the standards in the 2020 final rule under a technology review. Therefore, our revised standards are not based on assessment of risk, but instead based on evaluation of additional data. All the standards and other requirements in this final rule are being promulgated pursuant to CAA section 112(d)(2) and (3) or 112(d)(6). The EPA is not promulgating any new or revised standards under CAA section 112(f)(2) or revising its prior risk assessment results and conclusions, but instead are finalizing these standards and other requirements based on evaluation of additional data and applicable 112(d)

requirements that direct HAP emission reductions.

Comment: Commenters stated that the EPA's emissions estimates for UFIP sources are flawed and must be corrected. The EPA has attempted to estimate current HAP emission rates for all seven categories of UFIPs, and to estimate emission reductions that it projects would occur if the proposed opacity and work practice standards are achieved. The commenter claims that EPA's emissions estimates are based, in part, on the use of incorrect emission factors, which cause a significant overstatement of emissions from UFIPs, and therefore significantly overestimates risk from UFIPs. These errors result in significant cascading and compounding effects that reveal that the current proposal will be prohibitively expensive and cannot be justified, particularly given the low-risk determination that the EPA has already made.

Response: The EPA disagrees that the UFIP emission factors led to a significant overestimation of emissions from UFIP sources. The emission factors for UFIP sources were developed from the literature, first principles, discussions with the II&S industry, or a combination of all three. The emission factors used for most UFIP sources are described in the memorandum titled *Development of Emissions Estimates for Fugitive or Intermittent HAP Emission Sources for an Example Integrated Iron and Steel Manufacturing Industry Facility for Input to the RTR Risk Assessment* (Docket ID Item No. EPA–HQ–OAR–2002–0083–0956). The emission factor used for bell leaks was lower than the emission factor used in 2019 after incorporating previous feedback from industry that the 2019 emission factor for bell leaks was an overestimation. The emission factor used for bell leaks is described in the memorandum titled *Unmeasured Fugitive and Intermittent Particulate Emissions and Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR part 63, subpart FFFFF* (Docket ID Item No. EPA–HQ–OAR–2002–0083–1447), this document is also referred to as the ''UFIP memorandum'' elsewhere in this preamble.

The PM emission factors for UFIP and capture and control efficiencies for control devices were taken primarily from a relatively recent (2006) EPA document. However, this document used as its primary source of data the 1995 update of the EPA's AP–42 section for the II&S manufacturing industry (section 12.5), which relied upon even older (1970) data in some cases. However, because the 2006 EPA document was developed by the EPA after the II&S manufacturing industry MACT was promulgated and was based on an expert evaluation of the available emission information, it is considered the most reliable source of information about PM emissions for the II&S manufacturing industry available to the EPA and, hence, the most reliable information to be used for UFIP sources.

Other data that were used to estimate UFIP emissions not available in the 2006 EPA document were taken from reliable sources in the literature. In some cases, for the purposes of the II&S manufacturing industry RTR, an emission factor from AP–42 for one II&S manufacturing industry source was used for another II&S manufacturing industry source based on good engineering judgment. For example, if EPA staff determined that the two sources were similar (*e.g.,* used similar processes, equipment, input materials, control devices, etc.), then staff used such a source to estimate emissions from another similar source. If not, staff searched for other relevant information to estimate emissions. Whenever possible, the original source of data referenced by the documents was obtained and reviewed; these references are cited in the ''Example Facility memorandum'' along with the 1995 EPA AP–42 document. Also, where available, AP–42 emission factor quality ratings were provided. In some cases, none of the available literature provided emission factors considered appropriate for today's industry. In these cases, the EPA developed emission factors from basic scientific principles, industry data and feedback, emission factors for similar sources, and the EPA's knowledge of the process. Further explanation and discussion of how emissions were estimated are available in the *Development of Emissions Estimates for Fugitive or Intermittent HAP Emission Sources for an Example Integrated Iron and Steel Manufacturing Industry Facility for Input to the RTR Risk Assessment* (Example facility memorandum) and/or the UFIP memorandum cited previously in this preamble, which are available in the docket for this action.

Comment: Commenters stated the EPA must consider additional data in setting limits. Although the EPA collected data in 2022 from the eight impacted facilities, the commenters urged the EPA to compile and consider additional data before finalizing these 2023 amendments. The limited data collection did not reflect the full range of variability due to seasonal effects and variable operating scenarios. While much of the industry meets the proposed limits at times, the variability may require investment in controls that are currently excluded from the cost estimates in the rules. The EPA must consider additional data and revise the proposed limits to adjust them upwards, as appropriate to account for variability, or eliminate the proposed limit where test results were below detectable levels.

Response: The EPA has made use of all valid test data, both received through the section 114 request in 2022 and submitted during the comment period to establish the emissions limits for sinter plants, BF stoves, BF Primary control devices and BOPF primary control devices. These ''point source'' emissions limits were derived using the UPL methodology using all the valid data. Regarding opacity limits for planned openings and slag processing, we used all valid data for 2022 that we received though the section 114 request in electronic format and that were gathered following the methods, instruction and conditions described in the section 114 request and because these data reflected the most current year. The fenceline monitoring requirements are based on evaluation all the available fenceline monitoring data that EPA received from 16 monitoring sites. EPA considered the variability across all 16 sites to determine the appropriate action level, which is described in detail in the proposed rule preamble published on July 31, 2023 (88 FR 49402). Regarding the work practice standards for Bell Leaks, beaching and unplanned openings, those standards wer developed using data collected through the section 114 requests along with additional data and information collected through public comments. For more details, see the technical memos cited in responses above.

Comment: Commenters stated that the EPA should expand the proposed standards to include best work practices that reduce toxic emissions from steel mills at a minimum by 65% as was shown possible in 2019. Commenters stated that the EPA should ensure air monitoring and testing includes ALL 12 toxic emissions, not simply chromium, as currently proposed.

Response: The change from the 65 percent emission reduction estimated in 2019 to the emission reductions calculated for this rule is primarily due to calculation improvements based on newly received data rather than changes to the set of work practices published. The EPA is finalizing many of the same UFIP work practices that were published for comment in 2019. However, through the 2022 section 114 collection the EPA received information about work practices that are currently being utilized by facilities. The data

showed that a subset of the facilities are already utilizing some of the UFIP work practices that are being finalized, which was not taken into account in the baseline emissions estimate conducted in 2019. In the emissions estimate conducted for this rulemaking, baseline emissions were adjusted based on facility-specific information on work practices that are already in use, resulting in lower baseline emissions. If a facility is already using a work practice that is being finalized in this rulemaking, the percent reduction of emissions estimated for that work practice was also removed from the total estimated emission reduction for that facility. The estimated baseline emissions and emission reductions are described in the memorandum titled *Unmeasured Fugitive and Intermittent Particulate Emissions and Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR part 63, subpart FFFFF* (Docket ID Item No. EPA–HQ–OAR–2002–0083–1447).

G. Severability of Standards

This final rule includes MACT standards promulgated under CAA section 112(d)(2)–(3), as well as targeted updates to existing standards and work practices promulgated under section 112(d)(6). We intend each separate portion of this rule to operate independently of and to be severable from the rest of the rule.

First, each set of standards rests on stand-alone scientific determinations that do not rely on judgments made in other portions of the rule. For example, our judgments regarding the 112(d)(2)–(3) MACT Standard for *planned* bleeder valve openings rest on the best performing units' historical data, based on opacity values; in contrast, our judgments regarding 112(d)(6) work practice standards for the basic oxygen process furnace rest on different analyses, including updates to industry standards in practices. Thus, our assessment that the 112(d)(2)–(3) MACT standards are feasible and appropriate is fully independent of our judgments about the 112(d)(6) technology-review-update standards, and vice versa.

Further, EPA also finds that the implementation of each set of CAA 112(d)(2)–(3) MACT standards and each set of 112(d)(6) technology updates, including monitoring requirements, is independent. For example, there is nothing precluding a source from complying with its unplanned bleeder-valve-opening MACT limit, even if that source does not have any data from its fenceline monitors (which measure chromium), and vice versa. Thus, each aspect of EPA's overall approach to this source category could be implemented even in the absence of any one or more of the other elements included in this final rule.

Accordingly, EPA finds that each set of standards in this final rule is severable from and can operate independently of each other set of standards, and at a minimum, that the MACT emissions standards, as a group, are severable from the 112(d)(6) technology update standards (which include the fenceline monitoring requirement).

H. What are the effective and compliance dates?

All affected facilities must continue to comply with the previous provisions of 40 CFR part 63, subpart FFFFF until the applicable compliance date of this final rule. This final action meets the definition in 5 U.S.C. 804(2), so the effective date of the final rule will be 60 days after the promulgation date as specified in the Congressional Review Act. *See* 5 U.S.C. 801(a)(3)(A). The compliance dates are in Table 5. As shown in Table 5, EPA revised compliance dates for some of the final rule requirements. For explanation of revised compliance dates, see section 6 of the RTC.

TABLE 5—SUMMARY OF COMPLIANCE DATES FOR THE FINAL RULE

Source(s)	Rule requirement	Proposed compliance date	Final compliance date
All affected sinter plant windbox sources that commence construction or reconstruction on or before July 31, 2023.	New emissions limits for mercury, HCl, COS, D/F, and PAH.	6 months after the promulgation of the final rule.	3 years after the promulgation date of the final rule.
All affected sources that commence construction or reconstruction on or before July 31, 2023.	Fenceline monitoring requirements	Begin 1 year after the promulgation of the fenceline method for metals or 2 years after the promulgation date of the final rule, whichever is later.	Begin 1 year after the promulgation of the fenceline method for metals or 2 years after the promulgation date of the final rule, whichever is later.
All affected sources that commence construction or reconstruction on or before July 31, 2023.	Opacity limits for Planned Openings, Work Practices for Bell Leaks, and work practices for BOPF Shop.	12 months after the promulgation date of the final rule.	12 months after the promulgation date of the final rule.
All affected sources that commence construction or reconstruction on or before July 31, 2023.	Work Practices and Limits for Unplanned Openings, Work Practices for Beaching, and Opacity limit for Slag Processing.	12 months after the promulgation date of the final rule.	24 months after the promulgation date of the final rule.
All affected BF and BOPF sources that commence construction or reconstruction on or before July 31, 2023.	New emissions limits for HCl, THC, and D/F (see Table 4).	6 months after the promulgation date of the final rule.	3 years after the promulgation date of the final rule.
All affected sources that commence construction or reconstruction after July 31, 2023.	All new and revised provisions	Effective date of the final rule (or upon startup, whichever is later).	Effective date of the final rule (or upon startup, whichever is later).

IV. Summary of Cost, Environmental, and Economic Impacts

A. What are the affected sources?

The affected sources are facilities in the Integrated Iron and Steel Manufacturing Facilities source category. This includes any facility engaged in producing steel from iron ore. Integrated iron and steel manufacturing includes the following processes: sinter production, iron production, iron preparation (hot metal desulfurization), and steel production. The iron production process includes the production of iron in BFs by the reduction of iron-bearing materials with a hot gas. The steel production process includes the BOPF. Based on the data we have, there are eight operating integrated iron and steel manufacturing facilities subject to this NESHAP, and one idle facility.

B. What are the air quality impacts?

We project emissions reductions of about 64 tpy of HAP metals and about 473 tpy of $PM_{2.5}$ from UFIP sources in the Integrated Iron and Steel Manufacturing Facilities source category due to the new and revised standards for UFIP sources.

C. What are the cost impacts?

The estimated capital costs are the same as the proposed estimate at $5.4M and annualized costs are $2.8M per year for the source category for the new UFIP control requirements. Also, compliance testing for all the new standards is estimated to cost the same as the proposed estimate at about $1.7M once every 5 years for the source category (which equates to about an average of roughly $320,000 per year). The estimated cost breakdown for the fenceline monitoring requirement is the same as proposed at $25,000 capital cost and $41,100 annual operating costs per monitor, $100,000 capital costs and $164,000 annual operating costs per facility, and $800,000 capital costs and $1.3M annual operating costs for the source category (assumes 8 operating facilities). Additional monitoring, recordkeeping, and reporting requirements associated with the final rule are expected to cost the same as the proposed estimate at $7,500 per facility per year ($60,000 for the source category per year, assuming eight facilities). The cost estimates were primarily revised in response to modifications of the rule requirements, with some BTF components being substituted for MACT floor options, as well as in response to contractor revisions. Additional adjustments were made to recategorize some annual costs that were initially miscategorized as capital costs. Based on the comments received, emission limits for sinter plants were revised to reflect the installation of ACI controls. ACI controls on the sinter plants are expected to cost $950,000 in total capital cost and $2.3 million in total annual cost. The total estimated capital costs are $7.1 million and total estimated annualized costs are $6.7 million for all the requirements for the source category. However, annual costs could decrease after facilities complete 2 years of fenceline monitoring because we have included a sunset provision whereby if facilities remain below the one half of the action level for 2 full years, they can request to terminate the fenceline monitoring. Termination of the fenceline monitoring in no way impacts the requirement for facilities to meet all other obligations under this subpart including the general duty to minimize emissions of 40 CFR 63.7810(d). There may be some energy savings from reducing leaks of BF gas from bells, which is one of the work practices described in this preamble, however those potential savings have not been quantified.

D. What are the economic impacts?

The EPA conducted an economic impact analysis for the final rule in the Regulatory Impact Analysis (RIA), which is available in the docket for this action. If the compliance costs, which are key inputs to an economic impact analysis, are small relative to the receipts of the affected industries, then the impact analysis may consist of a calculation of annual (or annualized) costs as a percent of sales for affected parent companies. This type of analysis is often applied when a partial equilibrium, or more complex economic impact analysis approach, is deemed unnecessary, given the expected size of the impacts. The annualized cost per sales for a company represents the maximum price increase in the affected product or service needed for the company to completely recover the annualized costs imposed by the regulation. We conducted a cost-to-sales analysis to estimate the economic impacts of this final action, given that the EAV of the compliance costs over the period 2026–2035 are $5.1 million using a 7 percent or $5.3 million using a 3 percent discount rate in 2022 dollars, which is small relative to the revenues of the steel industry.

There are two parent companies directly affected by the rule: Cleveland-Cliffs, Inc. and U.S. Steel. Each reported greater than $20 billion in revenue in 2021. The EPA estimated the annualized compliance cost each firm is expected to incur and determined the estimated cost-to-sales ratio for each firm is less than 0.02 percent. Therefore, the projected economic impacts of the expected compliance costs of the rule are likely to be small. The EPA also conducted a small business screening to determine the possible impacts of the rule on small businesses. Based on the Small Business Administration size standards and Cleveland-Cliffs, Inc. and U.S. Steel employment information, this source category has no small businesses.

E. What are the benefits?

The UFIP emissions work practices to reduce HAP emissions (with concurrent control of $PM_{2.5}$) are anticipated to improve air quality and the health of persons living in surrounding communities. The opacity limits and UFIP work practices are expected to reduce about 64 tpy of HAP metal emissions, including emissions of manganese, lead, arsenic, and chromium. Due to methodology and data limitations, we did not attempt to monetize the health benefits of reductions in HAP in this analysis. Instead, we are providing a qualitative discussion of the health effects associated with HAP emitted from sources subject to control under the rule in section 4.2 of the RIA, available in the docket for this action. The EPA remains committed to improving methods for estimating HAP-reduction benefits by continuing to explore additional aspects of HAP-related risk from the integrated iron and steel manufacturing sector, including the distribution of that risk.

The opacity limits and UFIP work practices are also estimated to reduce $PM_{2.5}$ emissions by about 473 tpy for the source category. The EPA estimated monetized benefits related to avoided premature mortality and morbidity associated with reduced exposure to $PM_{2.5}$ for 2026–2035. The present-value (PV) of the short-term benefits for the rule are estimated to be $1.8 billion at a 3 percent discount rate and $1.2 billion at a 7 percent discount rate with an equivalent annualized value (EAV) of $200 million and $170 million, respectively. The EAV represents a flow of constant annual values that would yield a sum equivalent to the PV. The PV of the long-term benefits for the rule range are estimated to be $3.7 billion at a 3 percent discount rate and $2.6 billion at a 7 percent discount rate with an EAV of $420 million and $340 million, respectively. All estimates are reported in 2022 dollars. For the full set of underlying calculations see the *Integrated Iron and Steel Benefits workbook,* available in the docket for this action.

F. What analysis of environmental justice did we conduct?

To examine the potential for any EJ issues that might be associated with Integrated Iron and Steel Manufacturing Facilities sources, we performed a proximity demographic assessment, which is an assessment of individual demographic groups of the populations living within 5 kilometers (km) and 50 km of the facilities. The EPA then compared the data from this assessment to the national average for each of the demographic groups. This assessment did not inform and was not used to develop the amended standards established in the final action. The amended standards were established based on the technical and scientific determinations described herein.

The EPA defines EJ as ‘‘the just treatment and meaningful involvement of all people regardless of income, race, color, national origin, Tribal affiliation, or disability, in agency decision-making and other Federal activities that affect human health and the environment so that people: (i) are fully protected from

disproportionate and adverse human health and environmental effects (including risks) and hazards, including those related to climate change, the cumulative impacts of environmental and other burdens, and the legacy of racism or other structural or systemic barriers; and (ii) have equitable access to a healthy, sustainable, and resilient environment in which to live, play, work, learn, grow, worship, and engage in cultural and subsistence practices.'' [5] In recognizing that communities with EJ concerns often bear an unequal burden of environmental harms and risks, the EPA continues to consider ways of protecting them from adverse public health and environmental effects of air pollution.

For purposes of analyzing regulatory impacts, the EPA relies upon its June 2016 ''Technical Guidance for Assessing Environmental Justice in Regulatory Analysis,'' which provides recommendations that encourage analysts to conduct the highest quality analysis feasible, recognizing that data limitations, time, resource constraints, and analytical challenges will vary by media and circumstance. The Technical Guidance states that a regulatory action may involve potential EJ concerns if it could: (1) create new disproportionate impacts on communities with EJ concerns; (2) exacerbate existing disproportionate impacts on communities with EJ concerns; or (3) present opportunities to address existing disproportionate impacts on communities with EJ concerns through this action under development.

The EPA's EJ technical guidance states that ''[t]he analysis of potential EJ concerns for regulatory actions should address three questions: (A) Are there potential EJ concerns associated with environmental stressors affected by the regulatory action for population groups of concern in the baseline? (B) Are there potential EJ concerns associated with environmental stressors affected by the regulatory action for population groups of concern for the regulatory option(s) under consideration? (C) For the regulatory option(s) under consideration, are potential EJ concerns created or mitigated compared to the baseline?''[1]

The results of the proximity demographic analysis (see Table 6) indicate that, for populations within 5 km of the nine integrated iron and steel facilities, the percent of the population that is Black is more than twice the national average (27 percent versus 12 percent). In addition, the percentage of the population that is living below the poverty level (29 percent) and living below 2 times the poverty level (52 percent) is well above the national average (13 percent and 29 percent, respectively). Other demographics for the populations living within 5 km are below or near their respective national averages.

Within 50 km of the nine sources within the Integrated Iron and Steel Manufacturing Facilities category, the percent of the population that is Black is above the national average (20 percent versus 12 percent). Within 50 km the income demographics are similar to the national averages. Other demographics for the populations living within 50 km are below or near the respective national averages.

The methodology and the results of the demographic analysis are presented in the document titled *Analysis of Demographic Factors for Populations Living Near Integrated Iron and Steel Facilities,* which is available in the docket for this action.

As discussed in other subsections of the impacts of this action, in this action the EPA is adding requirements for facilities to improve UFIP emission control resulting in reductions of both metal HAP and $PM_{2.5}$. We estimate that all facilities will achieve reductions of HAP emissions as a result of this rule, including the facilities at which the percentage of the population living in close proximity who are Black and below poverty level is greater than the national average. The rule changes will have beneficial effects on air quality and public health for populations exposed to emissions from integrated iron and steel facilities.

TABLE 6—PROXIMITY DEMOGRAPHIC ASSESSMENT RESULTS FOR INTEGRATED IRON AND STEEL MANUFACTURING FACILITIES

Demographic group	Nationwide	Population within 50 km of 9 facilities	Population within 5 km of 9 facilities
Total Population	329,824,950	18,966,693	478,761
	Race and Ethnicity by Percent		
White	60	63	52
Black	12	20	27
Native American	0.6	0.1	0.2
Hispanic or Latino (includes white and nonwhite)	19	10	16
Other and Multiracial	9	7	5
	Income by Percent		
Below Poverty Level	13	13	29
Above Poverty Level	87	87	71
Below 2x Poverty Level	29	28	52
Above 2x Poverty Level	71	72	48
	Education by Percent		
Over 25 and without a High School Diploma	12	9	18
Over 25 and with a High School Diploma	88	91	82

[5] *https://www.federalregister.gov/documents/2023/04/26/2023-08955/revitalizing-our-nations-commitment-to-environmental-justice-for-all.*

TABLE 6—PROXIMITY DEMOGRAPHIC ASSESSMENT RESULTS FOR INTEGRATED IRON AND STEEL MANUFACTURING FACILITIES—Continued

Demographic group	Nationwide	Population within 50 km of 9 facilities	Population within 5 km of 9 facilities
	Linguistically Isolated by Percent		
Linguistically Isolated	5	3	6

Notes:
• The nationwide population count and all demographic percentages are based on the Census' 2016–2020 American Community Survey five-year block group averages and include Puerto Rico. Demographic percentages based on different averages may differ. The total population counts are based on the 2020 Decennial Census block populations.
• To avoid double counting, the ''Hispanic or Latino'' category is treated as a distinct demographic category for these analyses. A person is identified as one of five racial/ethnic categories above: White, African American, Native American, Other and Multiracial, or Hispanic/Latino. A person who identifies as Hispanic or Latino is counted as Hispanic/Latino for this analysis, regardless of what race this person may have also identified as in the Census.

In addition to the analyses described above, the EPA completed a risk-based demographics analysis for the residual risk and technology review (RTR) proposed rule (84 FR 42704, August 16, 2019) and the 2020 RTR final rule (85 FR 42074, July 13, 2020). A description of the demographic analyses and the results are provided in those two **Federal Register** notices.

V. Statutory and Executive Order Reviews

Additional information about these statutes and Executive Orders can be found at *https://www.epa.gov/laws-regulations/laws-and-executive-orders*.

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is a ''significant regulatory action'' as defined under section 3(f)(1) of Executive Order 12866, as amended by Executive Order 14094. Accordingly, EPA, submitted this action to the Office of Management and Budget (OMB) for Executive Order 12866 review. Any changes made in response to recommendations received as part of Executive Order 12866 review have been documented in the docket.

B. Paperwork Reduction Act (PRA)

The information collection activities in this final action have been submitted for approval to OMB under the PRA. The information collection request (ICR) document that the EPA prepared has been assigned EPA ICR number 2003.10. You can find a copy of the ICR in the docket for this rule, and it is briefly summarized here.

Respondents/affected entities: Integrated iron and steel manufacturing facilities.

Respondent's obligation to respond: Mandatory (40 CFR part 63, subpart FFFFF).

Estimated number of respondents: 8 facilities.

Frequency of response: One time.

Total estimated burden: The annual recordkeeping and reporting burden for facilities to comply with all of the requirements in the NESHAP is estimated to be 30,400 hours (per year). Burden is defined at 5 CFR 1320.3(b).

Total estimated cost: The annual recordkeeping and reporting cost for all facilities to comply with all of the requirements in the NESHAP is estimated to be $3,950,000 per year, of which $3,140,000 per year is for this final rule, and $803,000 is for other costs related to continued compliance with the NESHAP including $108,000 for paperwork associated with operation and maintenance requirements.

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for the EPA's regulations in 40 CFR are listed in 40 CFR part 9.

When OMB approves this ICR, the Agency will announce that approval in the **Federal Register** and publish a technical amendment to 40 CFR part 9 to display the OMB control number for the approved information collection activities contained in this final rule.

C. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. This action will not impose any requirements on small entities. The Agency confirmed through responses to a CAA section 114 information request that there are only eight integrated iron and steel manufacturing facilities currently operating in the United States and that these plants are owned by two parent companies that do not meet the definition of small businesses, as defined by the U.S. Small Business Administration.

D. Unfunded Mandates Reform Act (UMRA)

This action does not contain an unfunded mandate of $100 million or more as described in UMRA, 2 U.S.C. 1531–1538, and does not significantly or uniquely affect small governments. This action imposes no enforceable duty on any state, local, or Tribal governments or the private sector.

E. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the National Government and the states, or on the distribution of power and responsibilities among the various levels of government.

F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

This action does not have tribal implications as specified in Executive Order 13175. It will not have substantial direct effects on tribal governments, on the relationship between the Federal government and Indian tribes, or on the distribution of power and responsibilities between the Federal government and Indian tribes. No tribal governments own facilities subject to the NESHAP. Thus, Executive Order 13175 does not apply to this action.

G. National Technology Transfer and Advancement Act (NTTAA) and 1 CFR Part 51

This action involves technical standards. Therefore, the EPA conducted searches for the Integrated Iron and Steel Manufacturing Facilities NESHAP through the Enhanced National Standards Systems Network (NSSN) Database managed by the American National Standards Institute

(ANSI). We also conducted voluntary consensus standards (VCS) organizations and accessed and searched their databases. We conducted searches for EPA Methods 1, 2, 2F, 2G, 3, 3A, 3B, 4, 5, 5D, 9, 17, 23, 25A, 26A, 29, and 30B of 40 CFR part 60, appendix A, 320 of 40 CFR part 63 appendix, and SW–846 Method 9071B. During the EPA's VCS search, if the title or abstract (if provided) of the VCS described technical sampling and analytical procedures that are similar to the EPA's referenced method, the EPA ordered a copy of the standard and reviewed it as a potential equivalent method. We reviewed all potential standards to determine the practicality of the VCS for this rule. This review requires significant method validation data that meet the requirements of EPA Method 301 for accepting alternative methods or scientific, engineering, and policy equivalence to procedures in the EPA referenced methods. The EPA may reconsider determinations of impracticality when additional information is available for particular VCS.

No applicable VCS was identified for EPA Methods 1, 2, 2F, 2G, 3, 3A, 3B, 4, 5, 5D, 9, 17, 23, 25A, 26A, 29, 30B and SW–846 Method 9071B not already incorporated by reference in this subpart. The search identified one VCS that was potentially applicable for this rule in lieu of EPA Method 29. After reviewing the available standard, the EPA determined that the VCS identified for measuring emissions of pollutants subject to emissions standards in the rule would not be practical due to lack of equivalency. The EPA incorporates by reference VCS ASTM D6348–12 (Reapproved 2020), ''Standard Test Method for Determination of Gaseous Compounds by Extractive Direct Interface Fourier Transform (FTIR) Spectroscopy,'' as an acceptable alternative to EPA Method 320 of appendix A to 40 CFR part 63 with caveats requiring inclusion of selected annexes to the standard as mandatory. The ASTM D6348–12 (R2020) method is an extractive FTIR spectroscopy-based field test method and is used to quantify gas phase concentrations of multiple target compounds in emission streams from stationary sources. This field test method provides near real time analysis of extracted gas samples. In the September 22, 2008, NTTAA summary, ASTM D6348–03(2010) was determined equivalent to EPA Method 320 with caveats. ASTM D6348–12 (R2020) is a revised version of ASTM D6348–03(2010) and includes a new section on accepting the results from direct measurement of a certified spike gas cylinder, but still lacks the caveats we placed on the D6348–03(2010) version. We are finalizing that the test plan preparation and implementation in the Annexes to ASTM D 6348–12 (R2020), Annexes Al through A8 are mandatory; and in ASTM D6348–12 (R2020) Annex A5 (Analyte Spiking Technique), the percent (%) R must be determined for each target analyte (Equation A5.5). We are finalizing that, in order for the test data to be acceptable for a compound, %R must be 70% > R ≤ 130%. If the %R value does not meet this criterion for a target compound, the test data is not acceptable for that compound and the test must be repeated for that analyte (*i.e.,* the sampling and/or analytical procedure should be adjusted before a retest). The %R value for each compound must be reported in the test report, and all field measurements must be corrected with the calculated %R value for that compound by using the following equation:

$$Reported\ Results = \frac{Stack\ Concentration}{\%R} = 100$$

The ASTM D6348–12 (R2020) method is available at ASTM International, 1850 M Street NW, Suite 1030, Washington, DC 20036. See *www.astm.org/*.

The EPA is also incorporating by reference Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV: Meteorological Measurements, Version 2.0 (Final), March 2008 (EPA–454/B–08–002). The Quality Assurance Handbook for Air Pollution Measurement Systems; Volume IV: Meteorological Measurements is an EPA developed guidance manual for the installation, operation, maintenance and calibration of meteorological systems including the wind speed and direction using anemometers, temperature using thermistors, and atmospheric pressure using aneroid barometers, as well as the calculations for wind vector data for on-site meteorological measurements. This VCS may be obtained from the EPA's National Service Center for Environmental Publications (*www.epa.gov/nscep*).

Additional information for the VCS search and determination can be found in the memorandum, *Voluntary Consensus Standard Results for National Emission Standards for Hazardous Air Pollutants: Integrated Iron and Steel Manufacturing,* which is available in the docket for this action.

ASTM D7520–16 is already approved for the location in which it appears in the amendatory text.

H. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations and Executive Order 14096: Revitalizing Our Nation's Commitment to Environmental Justice for All

The EPA believes that the human health or environmental conditions that exist prior to this action result in or have the potential to result in disproportionate and adverse human health or environmental effects on communities with EJ concerns. For this action the EPA conducted an assessment of the various demographic groups living near Integrated Iron and Steel facilities (as described in section V.F of this preamble) that might potentially be impacted by emissions from Integrated Iron and Steel Facilities. For populations living within 5 km of the nine integrated iron and steel facilities, the percent of the population that is Black is more than twice the national average (27 percent versus 12 percent). Specifically, within 5 km of six of the nine facilities, the percent of the population that is Black is more than 1.5 times the national average (ranging between 1.5 times and 7 times the national average). The percentage of the population that is living below the poverty level (29 percent) and living below 2 times the poverty level (52 percent) is well above the national average (13 percent and 29 percent, respectively). Specifically, within 5 km of seven of the nine facilities, the percent of the population that is living below the poverty level is more than 1.5 times the national average (ranging from 1.5 times and 3 times the national average). Other demographics for the populations living within 5 km are below or near the respective national averages.

The EPA believes that this action is likely to reduce existing disproportionate and adverse effects on communities with EJ concerns. This

action requires facilities to improve UFIP emission control resulting in reductions of about 64 tpy of metal HAP and about 473 tpy $PM_{2.5}$. We estimate that all facilities will achieve reductions of HAP emissions as a result of this rule, including the facilities at which the percentage of the population living in close proximity who are African American and below poverty level is greater than the national average.

The information supporting this Executive Order review is contained in sections IV and V of this preamble. The demographic analysis is available in a document titled *Analysis of Demographic Factors for Populations Living Near Integrated Iron and Steel Facilities,* which is available in the docket for this action.

I. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

Executive Order 13045 (62 FR 19885, April 23, 1997) directs federal agencies to include an evaluation of the health and safety effects of the planned regulation on children in federal health and safety standards and explain why the regulation is preferable to potentially effective and reasonably feasible alternatives. This action is not subject to Executive Order 13045 because the EPA does not believe the environmental health risks or safety risks addressed by this action present a disproportionate risk to children.

J. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

This action is not a ''significant energy action'' because it is not likely to have a significant adverse effect on the supply, distribution or use of energy. We have concluded that this action is not likely to have any adverse energy effects because it contains no regulatory requirements that will have an adverse impact on productivity, competition, or prices in the energy sector.

K. Congressional Review Act (CRA)

This action is subject to the CRA, and the EPA will submit the rule report to each House of the Congress and to the Comptroller General of the United States. This action meets the criteria set forth in 5 U.S.C. 804(2).

List of Subjects in 40 CFR Part 63

Environmental protection, Air pollution control, Hazardous substances, Hydrogen chloride, Hydrogen fluoride, Incorporation by reference, Mercury, Reorting and recordkeeping requirements.

Michael S. Regan,
Administrator.

For the reasons stated in the preamble, title 40, chapter I of the Code of Federal Regulations is amended as follows:

PART 63—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES

■ 1. The authority citation for part 63 continues to read as follows:

Authority: 42 U.S.C. 4701, *et seq.*

Subpart A—General Provisions

■ 2. Section 63.14 is amended by revising paragraphs (i)(88) and (110) and paragraph (o) introductory text and adding paragraph (o)(3) to read as follows:

§ 63.14 Incorporations by reference.

* * * * *

(i) * * *

(88) ASTM D6348–12 (Reapproved 2020), Determination of Gaseous Compounds by Extractive Direct Interface Fourier Transform (FTIR) Spectroscopy, including Annexes A1 through A8, Approved December 1; 2020, IBR approved for §§ 63.365(b); *63.7825(g)* and *(h).*

* * * * *

(110) ASTM D7520–16, Standard Test Method for Determining the Opacity of a Plume in the Outdoor Ambient Atmosphere, approved April 1, 2016; IBR approved for §§ 63.1625(b); table 3 to subpart LLLLL; 63.7823(c) through (f), 63.7833(g); 63.11423(c).

* * * * *

(o) U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue NW, Washington, DC 20460; phone: (202) 272–0167; website: *www.epa.gov/aboutepa/forms/contact-epa.*

* * * * *

(3) EPA–454/B–08–002, Quality Assurance Handbook for Air Pollution Measurement Systems; Volume IV: Meteorological Measurements, Version 2.0 (Final), Issued March 2008, IBR approved for § 63.7792(b).

* * * * *

Subpart FFFFF—National Emission Standards for Hazardous Air Pollutants for Integrated Iron and Steel Manufacturing Facilities

■ 3. Amend § 63.7782 by revising paragraphs (c), (d), and (e) to read as follows:

§ 63.7782 What parts of my plant does this subpart cover?

* * * * *

(c) This subpart covers emissions from the sinter plant windbox exhaust, discharge end, and sinter cooler; the blast furnace casthouse; the blast furnace stove; and the BOPF shop including each individual BOPF and shop ancillary operations (hot metal transfer, hot metal desulfurization, slag skimming, and ladle metallurgy). This subpart also covers fugitive and intermittent particulate emissions from blast furnace unplanned bleeder valve openings, blast furnace planned bleeder valve openings, blast furnace and BOPF slag processing, handling, and storage, blast furnace bell leaks, beaching of iron from blast furnaces, blast furnace casthouse fugitives, and BOPF shop fugitives.

(d) A sinter plant, blast furnace, blast furnace stove, or BOPF shop at your integrated iron and steel manufacturing facility is existing if you commenced construction or reconstruction of the affected source before July 13, 2001.

(e) A sinter plant, blast furnace, blast furnace stove, or BOPF shop at your integrated iron and steel manufacturing facility is new if you commence construction or reconstruction of the affected source on or after July 13, 2001. An affected source is reconstructed if it meets the definition of reconstruction in § 63.2.

■ 4. Amend § 63.7783 by revising paragraph (a) introductory text and adding paragraph (g) to read as follows:

§ 63.7783 When do I have to comply with this subpart?

(a) If you have an existing affected source, you must comply with each emission limitation, standard, and operation and maintenance requirement in this subpart that applies to you by the dates specified in paragraphs (a)(1) and (2) of this section. This paragraph does not apply to the emission limitations for BOPF group: mercury (Hg); sinter plant windbox: Hg, hydrochloric acid (HCl), carbonyl sulfide (COS); Blast Furnace casthouse: HCl, total hydrocarbon (THC); Blast Furnace stove: HCl and total hydrocarbon (THC); primary emission control system for a BOPF: 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8–TCDD) toxic equivalent (TEQ), HCl, THC; fugitive and intermittent particulate sources.

* * * * *

(g) If you have an existing affected source or a new or reconstructed affected source for which construction or reconstruction commenced on or before July 31, 2023, each sinter plant windbox, BF casthouse, BF stove,

primary emission control system for a BOPF, and fugitive and intermittent particulate source at your facility must be in compliance with the applicable emission limits in table 1 of this subpart through performance testing under § 63.7825, April 3, 2025, except for the following:

(1) All affected sinter plant windbox sources that commence construction or reconstruction on or before July 31, 2023, must be in compliance with Hg, HCl, COS, TEQ, and PAH emissions limits in table 1 to this subpart through performance testing by April 3, 2027.

(2) All affected BF and BOPF sources that commence construction or reconstruction on or before July 31, 2023, must be in compliance with HCl, THC, and TEQ emissions limits in table 1 to this subpart through performance testing by April 3, 2027.

(3) All affected sources that commence construction or reconstruction on or before July 31, 2023 must be in compliance with work practices and limits for unplanned openings, work practices for beaching, and the opacity limit for slag processing in table 1 to this subpart through performance testing (or through reporting of number of unplanned openings for limits applicable to unplanned openings shown in table 1) by April 3, 2026.

(4) All affected sources that commence construction or reconstruction after July 31, 2023, must be in compliance with all new and revised provisions in table 1 to this subpart through performance testing by April 3, 2024 or upon startup, whichever is later.

■ 5. Amend § 63.7791 by revising the section heading to read as follows:

§ 63.7791 How do I comply with the requirements for the control of mercury from BOPF Groups?

* * * * *

■ 6. Add § 63.7792 to read as follows:

§ 63.7792 What fenceline monitoring requirements must I meet?

The owner or operator must conduct sampling along the facility property boundary and analyze the samples in accordance with paragraphs (a) through (g) of this section.

(a) Beginning either 1 year after promulgation of the test method for fenceline sampling of metals applicable to this subpart or April 3, 2026 whichever is later, the owner or operator must conduct sampling along the facility property boundary and analyze the samples in accordance with the method and paragraphs (a)(1) through (3) of this section.

(1) The owner or operator must monitor for total chromium.

(2) The owner or operator must use a sampling period and sampling frequency as specified in paragraphs (a)(2)(i) through (iii) of this section.

(i) *Sampling period.* A 24-hour sampling period must be used. A sampling period is defined as the period during active collection of a sample and does not include the time required to analyze the sample.

(ii) *Sampling frequency.* The frequency of sample collection must be samples at least every 6 calendar days, such that the beginning of each sampling period begins no greater than approximately 144 hours (±12 hours) from the end of the previous sample.

(iii) *Sunset provision.* When the annual rolling average Δc remains less than 0.05 µg/m³ for 24 months in succession, a test waiver may be requested from the Administrator to remove or reduce fenceline sampling requirements. If the annual rolling average Δc exceeds 0.05µg/m³, the determination of 24 consecutive annual average Δc months restarts.

(3) The owner or operator must determine sample locations in accordance with paragraphs (b)(3)(i) through (v) of this section.

(i) The monitoring perimeter must be located between the property boundary and the process unit(s), such that the monitoring perimeter encompasses all potential sources of the target analyte(s) specified in paragraph (a)(1) of this section.

(ii) The owner or operator must place a minimum of 4 samplers around the monitoring perimeter.

(iii) To determine sampling locations, measure the length of the monitoring perimeter.

(A) Locate the point downwind of the prevailing wind direction.

(B) Divide the monitoring perimeter equally into 4 evenly spaced sampling points, with one located in accordance with paragraph (a)(3)(iii)(A) of this section.

(4) The owner or operator must follow the procedures in of the fenceline metals test method to determine the detection limit of the target analyte(s) and requirements for quality assurance samples.

(b) The owner or operator must collect and record meteorological data according to the applicable requirements in paragraphs (b)(1) through (3) of this section.

(1) If monitoring is conducted under paragraph (b) of this section, if a near-field source correction is used as provided in paragraph (f)(2) of this section, or if an alternative test method is used that provides time-resolved measurements, the owner or operator must use an on-site meteorological station in accordance with the metals fenceline test method applicable to this subpart. Collect and record hourly average meteorological data, including temperature, barometric pressure, wind speed and wind direction and calculate daily unit vector wind direction and daily sigma theta.

(2) For cases other than those specified in paragraph (c)(1) of this section, the owner or operator must collect and record sampling period average temperature and barometric pressure using either an on-site meteorological station in accordance with the metals fenceline test method of this part or, alternatively, using data from a National Weather Service (NWS) meteorological station provided the NWS meteorological station is within 40 kilometers (25 miles) of the facility.

(3) If an on-site meteorological station is used, the owner or operator must follow the calibration and standardization procedures for meteorological measurements in EPA–454/B–08–002 (incorporated by reference, see § 63.14).

(c) Within 45 days of completion of each sampling period, the owner or operator must determine whether the results are above or below the action level as follows.

(1) The owner or operator must determine the facility impact on the concentration (Δc) for each sampling period according to either paragraph (d)(1)(i) or (ii) of this section, as applicable.

(i) Except when near-field source correction is used as provided in paragraph (d)(1)(ii) of this section, the owner or operator must determine the highest and lowest sample results individually from the sample pool and calculate the Δc as the difference in these concentrations. Co-located samples must be averaged together for the purposes of determining the concentration at a particular sampling location, and, if applicable, for determining Δc. The owner or operator must adhere to the following procedures when one or more samples for the sampling period are below the method detection limit for a particular compound:

(A) If the lowest detected value is below detection, the owner or operator must use zero as the lowest sample result when calculating Δc.

(B) If all sample results are below the method detection limit, the owner or operator must use the highest method detection limit for the sample set as the highest sample result and zero as the

lowest sample result when calculating Δc.

(ii) When near-field source correction is used as provided in paragraph (g) of this section, the owner or operator must determine Δc using the calculation protocols outlined in the approved site-specific monitoring plan and in paragraph (g) of this section.

(2) The owner or operator must calculate the annual average Δc based on the average of the Δc values for the 61 most recent sampling periods. The owner or operator must update this annual average value after receiving the results of each subsequent sampling period.

(3) The action level for chromium is 0.1 μg/m³. If the annual average Δc value (rounded to 1 significant figure) is greater than the action level, the concentration is above the action level, and the owner or operator must conduct a root cause analysis and corrective action in accordance with paragraph (d) of this section.

(d) Once any action level in paragraph (c)(3) of this section has been exceeded, the owner or operator must take the following actions to bring the annual average Δc back below the action level(s).

(1) Within 5 days of updating the annual average value as required in (c)(2) and determining that any action level in paragraph (c)(3) of this section has been exceeded (*i.e.,* in no case longer than 50 days after completion of the sampling period), the owner or operator must initiate a root cause analysis to determine appropriate corrective action. A root cause analysis is an assessment conducted through a process of investigation to determine the primary underlying cause and all other contributing causes to an exceedance of the action level(s) set forth in paragraph (c)(3).

(2) The initial root cause analysis may include, but is not limited to:

(i) Visual inspection to determine the cause of the high emissions.

(ii) Operator knowledge of process changes (*e.g.,* a malfunction or release event).

(3) If the initial root cause cannot be identified using the type of techniques described in paragraph (d)(2) of this section, the owner or operator must employ more frequent sampling and analysis to determine the root cause of the exceedance.

(i) The owner or operator may first employ additional monitoring points or more frequent sampling to determine the root cause of the exceedance.

(ii) If the owner or operator has not determined the root cause of the exceedance within 30 days of determining that the action level has been exceeded, the owner or operator must employ the appropriate more time resolute sampling techniques (*e.g.,* continuous multi metals monitors) to locate the cause of the exceedance. If the root cause is not identified after 28 days, either the more time resolute monitor must be relocated or an additional more time resolute monitor must be added. Relocation or addition of extra monitors must continue after each 28-day period of nonidentification until the owner or operator can identify the root cause of the exceedance.

(4) If the underlying primary and other contributing causes of the exceedance are deemed to be under the control of the owner or operator, the owner or operator must take appropriate corrective action as expeditiously as possible to bring annual average fenceline concentrations back below the action level(s) set forth in paragraph (c)(2)(3) of this section. At a minimum, the corrective actions taken must address the underlying primary and other contributing cause(s) determined in the root cause analysis to prevent future exceedances from the same underlying cause(s).

(5) The root cause analysis must be completed and initial corrective actions taken no later than 45 days after determining there is an exceedance of an action level.

(e) An owner or operator must develop a corrective action plan if the conditions in either paragraph (e)(1) or (2) of this section are met. The corrective action plan must describe the corrective action(s) completed to date, additional measures that the owner or operator proposes to employ to expeditiously reduce annual average fenceline concentrations below the action level set forth in paragraph (c)(3) of this section, and a schedule for completion of these measures. The corrective action plan must identify actions to address the underlying primary and other contributing cause(s) determined in the root cause analysis to prevent future exceedances from the same underlying cause(s). The corrective action plan does not need to be approved by the Administrator. However, if upon review, the Administrator disagrees with the additional measures outlined in the plan, the owner or operator must revise and resubmit the plan within 7 calendar days of receiving comments from the Administrator.

(1) The owner or operator must develop a corrective action plan if, upon completion of the root cause analysis and initial corrective actions required in paragraph (d) of this section, the Δc value for the next sampling period, for which the sampling start time begins after the completion of the initial corrective actions, is greater than 0.1 μg/m³. The owner or operator must submit the corrective action plan to the Administrator within 60 days after receiving the analytical results indicating that the Δc value for the sampling period following the completion of the initial corrective action is greater than 0.1 μg/m³.

(2) The owner or operator must develop a corrective action plan if complete implementation of all corrective measures identified in the root cause analysis required by paragraph (d) of this section will require more than 45 days. The owner or operator must submit the corrective action plan to the Administrator no later than 60 days following the completion of the root cause analysis required in paragraph (d) of this section.

(f) An owner or operator may request approval from the Administrator for a site-specific monitoring plan to account for offsite upwind sources according to the requirements in paragraphs (f)(1) through (4) of this section.

(1) The owner or operator must prepare and submit a site-specific monitoring plan and receive approval of the site-specific monitoring plan prior to using the near-field source alternative calculation for determining Δc provided in paragraph (f)(2) of this section. The site-specific monitoring plan must include, at a minimum, the elements specified in paragraphs (f)(1)(i) through (v) of this section. The procedures in section 12 of Method 325A of appendix A of this part are not required, but may be used, if applicable, when determining near-field source contributions.

(i) Identification of the near-field source or sources.

(ii) Location of the additional monitoring stations that must be used to determine the uniform background concentration and the near-field source concentration contribution. Modeling may not be used in lieu of monitoring to identify uniform background concentration and near-field sources.

(iii) Identification of the fenceline monitoring locations impacted by the near-field source. If more than one near-field source is present, identify the near-field source or sources that are expected to contribute to the concentration at that monitoring location.

(iv) A description of (including sample calculations illustrating) the planned data reduction including the treatment of invalid data, data below detection limits, and data collected during calm wind periods; and

calculations to determine the near-field source concentration contribution for each monitoring location.

(v) A detailed description of the measurement technique, measurement location(s), the standard operation procedure, measurement frequency, recording frequency, measurement detection limit, and data quality indicators to ensure accuracy, precision, and validity of the data.

(2) When an approved site-specific monitoring plan is used, the owner or operator must determine Δc for comparison with the action level using the requirements specified in paragraphs (f)(2)(i) through (iii) of this section.

(i) For each monitoring location, calculate Δc_i using the following equation.

Equation 1 to paragraph (f)(1)(i)

$$\Delta c_i = MFC_i - NFS_i$$

Where:

Δc_i = The fenceline concentration, corrected for background, at measurement location i, micrograms per cubic meter (μg/m³).

MFC_i = The measured fenceline concentration at measurement location i, μg/m³.

NFS_i = The near-field source contributing concentration at measurement location i determined using the additional measurements and calculation procedures included in the site-specific monitoring plan, μg/m³. For monitoring locations that are not included in the site-specific monitoring plan as impacted by a near-field source, use NFS_i = 0 μg/m³.

(ii) When one or more samples for the sampling period are below the method detection limit, adhere to the following procedures:

(A) If the concentration at the monitoring location(s) used to determine the near-field source contributing concentration is below the method detection limit, the owner or operator must use zero for the monitoring location concentration when calculating NFS_i for that monitoring period.

(B) If a fenceline monitoring location sample result is below the method detection limit, the owner or operator must use the method detection limit as the sample result.

(iii) Determine Δc for the monitoring period as the maximum value of Δc_i from all of the fenceline monitoring locations for that monitoring period.

(3) The site-specific monitoring plan must be submitted and approved as described in paragraphs (f)(3)(i) through (iv) of this section.

(i) The site-specific monitoring plan must be submitted to the Administrator for approval.

(ii) The site-specific monitoring plan must also be submitted to the following address: U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Sector Policies and Programs Division, U.S. EPA Mailroom (E143–01), Attention: Integrated Iron and Steel Sector Lead, 109 T.W. Alexander Drive, Research Triangle Park, NC 27711. Electronic copies in lieu of hard copies may also be submitted to *fencelineplan@epa.gov.*

(iii) The Administrator will approve or disapprove the plan in 90 days. The plan is considered approved if the Administrator either approves the plan in writing or fails to disapprove the plan in writing. The 90-day period begins when the Administrator receives the plan.

(iv) If the Administrator finds any deficiencies in the site-specific monitoring plan and disapproves the plan in writing, the owner or operator may revise and resubmit the site-specific monitoring plan following the requirements in paragraphs (f)(3)(i) and (ii) of this section. The 90-day period starts over with the resubmission of the revised monitoring plan.

(4) The approval by the Administrator of a site-specific monitoring plan will be based on the completeness, accuracy, and reasonableness of the request for a site-specific monitoring plan. Factors that the Administrator will consider in reviewing the request for a site-specific monitoring plan include, but are not limited to, those described in paragraphs (f)(4)(i) through (v) of this section.

(i) The identification of the near-field source or sources and evidence of how the sources impact the fenceline concentrations.

(ii) The monitoring location selected to determine the uniform background concentration or an indication that no uniform background concentration monitor will be used.

(iii) The location(s) selected for additional monitoring to determine the near-field source concentration contribution.

(iv) The identification of the fenceline monitoring locations impacted by the near-field source or sources.

(v) The appropriateness of the planned data reduction and calculations to determine the near-field source concentration contribution for each monitoring location, including the handling of invalid data, data below the detection limit, and data during calm periods.

(vi) If more frequent monitoring is proposed, the adequacy of the description of and rationale for the measurement technique, measurement location(s), the standard operation procedure, measurement frequency, recording frequency, measurement detection limit, and data quality indicators to ensure accuracy, precision, and validity of the data.

(g) The owner or operator must comply with the applicable recordkeeping and reporting requirements in § 63.7841 and § 63.7842.

(1) As outlined in § 63.7(f), the owner or operator may submit a request for an alternative test method. At a minimum, the request must follow the requirements outlined in paragraphs (f)(1)(i) through (vi) of this section.

(i) The alternative method may be used in lieu of all or a partial number of the sampling locations required under paragraph (a) of this section.

(ii) The alternative method must be validated according to Method 301 in appendix A of this part or contain performance-based procedures and indicators to ensure self-validation.

(iii) The method detection limit must nominally be at least three times below the action level. The alternate test method must describe the procedures used to provide field verification of the detection limit.

(iv) If the alternative test method will be used to replace some or all samplers required under paragraph (a) of this section, the spatial coverage must be equal to or better than the spatial coverage provided under paragraph (a).

(v) For alternative test methods capable of real time measurements (less than a 5-minute sampling and analysis cycle), the alternative test method may allow for elimination of data points corresponding to outside emission sources for purpose of calculation of the high point for the two week average. The alternative test method approach must have wind speed, direction, and stability class of the same time resolution and within the footprint of the instrument.

(vi) For purposes of averaging data points to determine the Δc for the individual sampling period, all results measured under the method detection limit must use the method detection limit. For purposes of averaging data points for the individual sampling period low sample result, all results measured under the method detection limit must use zero.

■ 7. Add § 63.7793 to read as follows:

§ 63.7793 What work practice standards must I meet?

(a) You must meet each work practice limit in table 1 to this subpart that applies to you.

(b) For unplanned bleeder valve openings on a new and existing blast furnace, you must meet each work practice standard listed in paragraphs (b)(1) through (3) of this section.

(1) Develop and operate according to a ''Slip Avoidance Plan'' to minimize slips and submit it to EPA for approval;

(2) Install devices to continuously measure/monitor material levels in the furnace (*i.e.,* stockline), at a minimum of three locations, with alarms to inform operators of static (*i.e.,* not moving) stockline conditions which increase the likelihood of slips; and

(3) Install and use instruments on the furnace to monitor temperature and pressure to help determine when a slip is likely to occur.

(c) For each large bell on a new and existing blast furnace, you must meet each work practice standard listed in paragraphs (c)(1) and (2) of this section.

(1) Maintain metal seats to minimize wear on seals and emissions; and

(2) Replace or repair large bell seals according to § 63.7833(j).

(d) For each small bell on a new and existing blast furnace, you must meet each work practice standard listed in paragraphs (d)(1) and (2) of this section.

(1) Maintain metal seats to minimize wear on seals; and

(2) You must repair or replace small bell seals prior to the time period or metal throughput limit that has been proven and documented to produce no opacity from the small bell.

(e) For each iron beaching operation, you must meet each work practice standard listed in paragraphs (e)(1) and (2) of this section.

(1) Minimize the drop height of molten metal to the ground, the slope or grade of the area where beaching occurs, and the rate at which molten metal is poured onto the ground; and

(2) Use carbon dioxide shielding during beaching event; and/or use full or partial (hoods) enclosures around beached iron.

(f) For each BOPF at a new or existing shop, you must develop and operate according to a ''BOPF Shop Operating Plan'' to minimize fugitive emissions and detect openings and leaks and submit it to EPA for approval. Your BOPF Shop Operating Plan may include, but is not limited to, any of the items listed in paragraphs (f)(1) through (8) of this section.

(1) List all events that generate VE, including slopping and other steps company will take to reduce incidence rate. State the specific actions that operators will take when slag foaming approaches the mouth of the vessel in order to prevent slopping;

(2) Minimize hot iron pour/charge rate (minutes) and set a maximum pour rate in tons/second;

(3) Schedule of regular inspections of BOPF shop structure for openings and leaks to the atmosphere;

(4) Optimize positioning of hot metal ladles with respect to hood face and furnace mouth;

(5) Optimize furnace tilt angle during charging and set a maximum tilt angle during charging;

(6) Keep all openings, except roof monitors, closed, especially during transfer, to extent feasible and safe. All openings shall be closed unless the opening was in the original design of the Shop;

(7) Use higher draft velocities to capture more fugitives at a given distance from hood, if possible; and

(8) Monitor opacity periodically (*e.g.,* once per month) from all openings with EPA Method Alt-082 (camera) or with EPA Method 9 in appendix A–4 to part 60 of this chapter.

■ 8. Amend § 63.7800 by revising paragraph (b) introductory text and adding paragraphs (b)(8) and (9) to read as follows:

§ 63.7800 What are my operation and maintenance requirements?

* * * * *

(b) You must prepare and operate at all times according to a written operation and maintenance plan for each capture system or control device subject to an operating limit in § 63.7790(b). Each plan must address the elements in paragraphs (b)(1) through (9) of this section.

* * * * *

(8) Small Bell repair or replacement period, in weeks, or mass of material throughput, in tons, and the specific begin date and end date for the chosen repair or replacement period or throughput over which there were no visible emissions observed.

(9) Building drawings of the BF Casthouse and BOPF shop that show and list by number the openings, including doors and vents, that are part of the original design of the building.

■ 9. Amend § 63.7820 by revising paragraph (e) to read as follows:

§ 63.7820 By what date must I conduct performance tests or other initial compliance demonstrations?

* * * * *

(e) Notwithstanding the deadlines in this section, existing and new affected sources must comply with the deadlines for making the initial compliance demonstrations for the BOPF Group mercury emission limit set forth in paragraphs (e)(1) through (4) in this section.

* * * * *

■ 10. Revise § 63.7821 to read as follows:

§ 63.7821 When must I conduct subsequent performance tests?

(a) You must conduct subsequent performance tests to demonstrate compliance with all applicable emission and opacity limits in table 1 to this subpart at the frequencies specified in paragraphs (b) through (m) of this section.

(b) For each sinter cooler at an existing sinter plant and each emissions unit equipped with a control device other than a baghouse, you must conduct subsequent particulate matter and opacity performance tests no less frequently than twice (at mid-term and renewal) during each term of your title V operating permit.

(c) For each emissions unit equipped with a baghouse, you must conduct subsequent particulate matter and opacity performance tests no less frequently than once during each term of your title V operating permit.

(d) For sources without a title V operating permit, you must conduct subsequent particulate matter and opacity performance tests every 2.5 years.

(e) For each BOPF Group, if demonstrating compliance with the mercury emission limit in table 1 to this subpart through performance testing under §§ 63.7825 and 63.7833, you must conduct subsequent performance tests twice per permit cycle (*i.e.,* mid-term and initial/final) for sources with title V operating permits, and every 2.5 years for sources without a title V operating permit, at the outlet of the control devices for the BOPF Group.

(f) For each sinter plant windbox, you must conduct subsequent mercury, hydrogen chloride, carbonyl sulfide, dioxin/furan, and polycyclic aromatic hydrocarbon performance tests every 5 years.

(g) For each blast furnace stove and BOPF shop primary emission control device, you must conduct subsequent hydrogen chloride and total hydrocarbon testing every 5 years. For the BOPF shop primary emission control device, you must also conduct subsequent dioxin/furan testing every 5 years.

(h) For each blast furnace casthouse and BOPF shop, you must conduct subsequent opacity tests two times per

month during a cast, or during a full heat cycle, as appropriate.

(i) For planned bleeder valve openings on each blast furnace, you must conduct opacity tests according to § 63.7823(f) for each planned opening.

(j) For slag processing, handling, and storage operations for each blast furnace or BOPF, you must conduct subsequent opacity tests once per week for a minimum of 18 minutes for each: BF pit filling; BOPF slag pit filling; BF pit digging; BOPF slag pit digging; and one slag handling (either truck loading or dumping slag to slag piles).

(k) For large bells on each blast furnace, you must conduct visible emissions testing on the interbell relief valve according to EPA Method 22 in appendix A–7 to part 60 of this chapter, unless specified in paragraphs (k)(1) through (3) of this section. Testing must be conducted monthly, for 15 minutes.

(1) If visible emissions are detected for a large bell during the monthly visible emissions testing, you must conduct EPA Method 9 (in appendix A–4 to part 60 of this chapter) opacity tests in place of EPA Method 22 testing on that bell once per month, taking 3-minute averages for 15 minutes, until the large bell seal is repaired or replaced.

(2) If the average of 3 instantaneous visible emission readings taken while the interbell relief valve is exhausting exceeds 20 percent, you must initiate corrective action within five business days.

(3) Ten business days after the initial opacity exceedance of 20 percent, you must conduct an EPA Method 9 opacity test, taking 3-minute averages for 15 minutes. If the average of 3 instantaneous visible emissions readings from this test exceeds 20 percent, you must repair or replace that bell seal within 4 months.

(l) For small bells on each blast furnace, you must conduct visible emissions testing according to EPA Method 22 in appendix A–7 to part 60 of this chapter. Testing must be conducted monthly for 15 minutes. If visible emissions are observed, you must compare the period between the visible emissions being present and the most recent bell seal repair or replacement. If this time period or throughput is shorter or lower than the period or throughput stated in the O&M plan required by 63.7800, this new shorter period or lower limit shall be placed in the O&M plan as the work practice limit.

(m) For each blast furnace casthouse, you must conduct subsequent hydrogen chloride and total hydrocarbon testing every 5 years.

■ 11. Amend § 63.7823 by revising paragraph (a) and adding paragraphs (c)(3), (d)(6), and (f) through (h) to read as follows:

§ 63.7823 What test methods and other procedures must I use to demonstrate initial compliance with the opacity limits?

(a) For each discharge end of a sinter plant, sinter plant cooler, blast furnace casthouse, BOPF shop, and large bell on a blast furnace, you must conduct each performance test that applies to your affected source based on representative performance (*i.e.,* performance based on normal operating conditions) of the affected source for the period being tested, according to the conditions detailed in paragraphs (b) through (d) of this section. Representative conditions exclude periods of startup and shutdown. You shall not conduct performance tests during periods of malfunction. You must record the process information that is necessary to document operating conditions during the test and include in such record an explanation to support that such conditions represent normal operation. Upon request, you shall make available to the Administrator such records as may be necessary to determine the conditions of performance tests.

* * * * *

(c) * * *

(3) For the blast furnace casthouse, make observations at each opening:

(i) If EPA Method 9 is used, observations should be made separately at each opening.

(ii) If ASTM D7520–16 (incorporated by reference, see § 63.14) is used, observations may be read for more than one opening at the same time.

(d) * * *

(6) Make observations at each opening:

(i) If EPA Method 9 in appendix A–4 to part 60 of this chapter is used, observations should be made separately at each opening.

(ii) If ASTM D7520–16 (incorporated by reference, see § 63.14) is used, observations may be read for more than one opening at the same time.

* * * * *

(f) To determine compliance with the applicable opacity limit in table 1 to this subpart for planned bleeder valve openings at a blast furnace:

(1) Using a certified observer, determine the opacity of emissions according to EPA Method 9 in appendix A–4 to part 60 of this chapter. Alternatively, ASTM D7520–16 (incorporated by reference, see § 63.14) may be used with the following conditions:

(i) During the DCOT certification procedure outlined in Section 9.2 of ASTM D7520–16 (incorporated by reference, see § 63.14), the owner or operator or the DCOT vendor must be present the plumes in front of various backgrounds of color and contrast representing conditions anticipated during field use such as blue sky, trees, and mixed backgrounds (clouds and/or a sparse tree stand).

(ii) The owner or operator must also have standard operating procedures in place including daily or other frequency quality checks to ensure the equipment is within manufacturing specifications as outlined in Section 8.1 of ASTM D7520–16 (incorporated by reference, see § 63.14).

(iii) The owner or operator must follow the recordkeeping procedures outlined in § 63.10(b)(1) for the DCOT certification, compliance report, data sheets, and all raw unaltered JPEGs used for opacity and certification determination.

(iv) The owner or operator or the DCOT vendor must have a minimum of four independent technology users apply the software to determine the visible opacity of the 300 certification plumes. For each set of 25 plumes, the user may not exceed 15-percent opacity of any one reading and the average error must not exceed 7.5-percent opacity.

(v) Use of this approved alternative does not provide or imply a certification or validation of any vendor's hardware or software. The onus to maintain and verify the certification and/or training of the DCOT camera, software, and operator in accordance with ASTM D7520–16 (incorporated by reference, see § 63.14) and these requirements is on the facility, DCOT operator, and DCOT vendor.

(2) Conduct opacity observations in 6-minute block averages starting as soon as event begins or sunrise whichever is later and ending either when the bleeder valve closes, sunset, or after the first 6-minute block average where all readings are zero percent opacity, but in no case shall the opacity observation period be less than 6 minutes.

(g) To determine compliance with the applicable opacity limit in table 1 to this subpart for slag processing, handling, and storage operations for a blast furnace or BOPF:

(1) Using a certified observer, determine the opacity of emissions according to EPA Method 9 in appendix A–4 to part 60 of this chapter.

(2) Conduct opacity observations in 6-minute blocks for 30 minutes at each: slag dumping to BF pit; BOPF slag dumping to pit; BF pit digging, BOPF pit digging; slag dumping to a pile, slag

dumping to a piece of slag handling equipment such as crusher.

(h) To determine compliance with the work practice trigger for large bells on a blast furnace:

(1) Using a certified observer, determine the opacity of emissions according to EPA Method 9 in appendix A–4 to part 60 of this chapter.

(2) Conduct opacity observations of 15 instantaneous interbell relief valve emissions.

■ 12. Amend § 63.7825 by:

■ a. Revising the section heading, paragraph (a) introductory text, and paragraphs (b)(1)(v), (b)(2), and (c); and

■ b. Adding paragraphs (g) through (k).

The revisions and additions read as follows:

§ 63.7825 What test methods and other procedures must I use to demonstrate initial compliance with the emission limits for hazardous air pollutants?

(a) If demonstrating compliance with the emission limits in Table 1 to this subpart through performance testing, you must conduct a performance test to demonstrate initial compliance with the emission limit. If demonstrating compliance with the emission limit through performance testing, you must conduct each performance test that applies to your affected source based on representative performance (*i.e.,* performance based on normal operating conditions) of the affected source for the period being tested, according to the conditions detailed in paragraphs (b) through (k) of this section. Representative conditions exclude periods of startup and shutdown. You shall not conduct performance tests during periods of malfunction. Initial compliance tests must be conducted by the deadlines in § 63.7820(e).

* * * * *

(b) * * *

(1) * * *

(v) EPA Method 29 or 30B in appendix A–8 to part 60 of this chapter to determine the concentration of mercury from the exhaust stream stack of each unit. If performing measurements using EPA Method 29, you must collect a minimum sample volume of 1.7 dscm (60 dscf). Alternative test methods may be considered on a case-by-case basis per § 63.7(f).

(2) Three valid test runs are needed to comprise a performance test of each unit in table 1 to this subpart as applicable. If the performance testing results for any of the emission points yields a non-detect value, then the method detection limit (MDL) must be used to calculate the mass emissions (lb) for that emission unit and, in turn, for calculating the sum of the emissions (in units of pounds of mercury per ton of steel scrap or pounds of mercury per ton of product sinter) for all units subject to the emission standard for determining compliance. If the resulting mercury emissions are greater than the MACT emission standard, the owner or operator may use procedures that produce lower MDL results and repeat the mercury performance testing one additional time for any emission point for which the measured result was below the MDL. If this additional testing is performed, the results from that testing must be used to determine compliance (*i.e.,* there are no additional opportunities allowed to lower the MDL).

* * * * *

(c) Calculate the mass emissions, based on the average of three test run values, for each BOPF Group unit (or combination of units that are ducted to a common stack and are tested when all affected sources are operating pursuant to paragraph (a) of this section) using equation 1 to this paragraph (c) as follows:

Equation 1 to paragraph (c)

$$E = \frac{C_S \times Q \times t}{454{,}000 \times 35.31} \quad \text{(Eq. 1)}$$

Where:

E = Mass emissions of pollutant, pounds (lb);
C_s = Concentration of pollutant in stack gas, mg/dscm;
454,000 = Conversion factor (mg/lb);
Q = Volumetric flow rate of stack gas, dscf/min;
35.31 = Conversion factor (dscf/dscm); and
t = Duration of test, minutes.

* * * * *

(g) To demonstrate compliance with the emission limit for hydrogen chloride in table 1 to this subpart through performance testing, follow the test methods and procedures in paragraphs (g)(1) through (3) of this section.

(1) Determine the concentration of hydrogen chloride according to the following test methods:

(i) The methods specified in paragraphs (b)(1)(i) through (iv) of this section, and

(ii) EPA Method 26A in appendix A–8 to part 60 of this chapter to determine the concentration of hydrogen chloride from the exhaust stream stack of each unit, with the following conditions; or

(A) Collect a minimum sample volume of 70 dscf (2 dscm) of gas during each run.

(B) [Reserved]

(iii) EPA Method 320 in appendix A to this part to determine the concentration of hydrogen chloride and hydrogen fluoride from the exhaust stream stack of each unit. Alternatively, ASTM D6348–12(R2020), (incorporated by reference, see § 63.14) may be used with the following conditions:

(A) The test plan preparation and implementation in the Annexes to ASTM D 6348–12(R2020), Annexes A1 through A8 are mandatory; and

(B) In ASTM D6348–12(R2020) Annex A5 (Analyte Spiking Technique), the percent (%) R must be determined for each target analyte (Equation A5.5). In order for the test data to be acceptable for a compound, %R must be 70% ≥ R ≤ 130%. If the %R value does not meet this criterion for a target compound, the test data is not acceptable for that compound and the test must be repeated for that analyte (*i.e.,* the sampling and/or analytical procedure should be adjusted before a retest). The %R value for each compound must be reported in the test report, and all field measurements must be corrected with the calculated %R value for that compound by using the equation 2 o to this paragraph (g)(1)(iii)(B) as follows:

Equation 2 to paragraph (g)(1)(iii)(B)

$$Reported\ Results = \frac{c_s}{\%R} \times 100 \quad \text{(Eq. 2)}$$

Where

c_s = measured concentration in stack.

(2) At least three valid test runs are needed to comprise a performance test of each unit in table 1 to this subpart. If the performance testing results for any of the emission points yields a non-detect value, then the MDL must be used to calculate the mass emissions (lb) for that unit and, in turn, for calculating the emissions rate (lb/ton of product sinter, lb/ton of iron, or lb/ton of steel).

(3) Calculate the emissions from each new and existing affected source in pounds of hydrogen chloride per ton of throughput processed or unit of energy (tons of product sinter, tons of iron, tons of steel, or MMBtu) to determine initial compliance with the emission limits in table 1 to this subpart.

(h) To demonstrate compliance with the emission limit for carbonyl sulfide in table 1 to this subpart through performance testing, follow the test methods and procedures in paragraphs (h)(1) through (3) of this section.

(1) Determine the concentration of carbonyl sulfide according to the following test methods:

(i) The methods specified in paragraphs (b)(1)(i) through (iv) of this section, and

(ii) EPA Method 15 in appendix A–5 to part 60 of this chapter to determine the concentration of carbonyl sulfide from the exhaust stream stack of each unit; or

(iii) EPA Method 320 in appendix A to this part to determine the concentration of carbon disulfide and carbonyl sulfide from the exhaust stream stack of each unit. Alternatively, ASTM D6348–12 (R2020), (incorporated by reference, see § 63.14) may be used with the following conditions:

(A) The test plan preparation and implementation in the Annexes to ASTM D 6348–12 (R2020), Annexes A1 through A8 are mandatory; and

(B) In ASTM D6348–12 (R2020) Annex A5 (Analyte Spiking Technique), the percent (%) R must be determined for each target analyte (Equation A5.5). In order for the test data to be acceptable for a compound, %R must be 70% ≥ R ≤ 130%. If the %R value does not meet this criterion for a target compound, the test data is not acceptable for that compound and the test must be repeated for that analyte (*i.e.,* the sampling and/or analytical procedure should be adjusted before a retest). The %R value for each compound must be reported in the test report, and all field measurements must be corrected with the calculated %R value for that compound by using the Equation 2 of this section.

(2) Three valid test runs at least one hour in duration are needed to comprise a performance test of each unit in table 1 to this subpart. If the performance testing results for any of the emission points yields a non-detect value, then the MDL must be used to calculate the mass emissions (lb) for that unit and, in turn, for calculating the emissions rate (lb/ton of product sinter).

(3) Calculate the emissions from each new and existing affected source in pounds of carbonyl sulfide per ton of product sinter to determine initial compliance with the emission limits in table 1 to this subpart .

(i) To demonstrate compliance with the emission limit for total hydrocarbons in table 1 to this subpart through performance testing, follow the test methods and procedures in paragraphs (i)(1) through (5) of this section.

(1) Determine the concentration of total hydrocarbons according to the following test methods:

(i) The methods specified in paragraphs (b)(1)(i) through (iv) of this section, and

(ii) EPA Method 25A in appendix A–7 to part 60 of this chapter to determine the concentration of total hydrocarbons as propane from the exhaust stream stack of each unit.

(2) Three valid test runs at least one hour in duration are needed to comprise a performance test of each unit in table 1 to this subpart. If the performance testing results for any of the emission points yields a non-detect value, then the MDL must be used to calculate the mass emissions (lb) for that unit and, in turn, for calculating the emissions rate (lb/ton of iron or lb/ton of steel).

(3) For BOPF tests, the test runs must include at least one full production cycle (from scrap charge to 3 minutes after slag is emptied from the vessel) for each run, except for BOPF with closed hood systems, where sampling should be performed only during the primary oxygen blow and only for 20 heat cycles.

(4) For blast furnaces, each test run duration must be a minimum of 1 hour.

(5) Calculate the emissions from each new and existing affected source in pounds of total hydrocarbons as propane per ton of throughput processed or unit of energy (tons of iron, tons of steel, or MMBtu) to determine initial compliance with the emission limits in table 1 to this subpart.

(j) To demonstrate compliance with the emission limit for D/F TEQ in table 1 to this subpart through performance testing, follow the test methods and procedures in paragraphs (j)(1) through (4) of this section.

(1) Determine the concentration of each dioxin and furan listed in table 5 to this subpart according to the following test methods:

(i) The methods specified in paragraphs (b)(1)(i) through (iv) of this section, and

(ii) EPA Method 23 in appendix A–7 to part 60 of this chapter to determine the concentration of each dioxin and furan listed in table 5 to this subpart from the exhaust stream stack of each unit. You must collect a minimum sample volume of 105 dscf (3 dscm) of gas during each test run.

(2) Three valid test runs are needed to comprise a performance test of each unit in table 1 to this subpart. For determination of TEQ, zero may be used in subsequent calculations for values less than the estimated detection limit (EDL). For estimated maximum pollutant concentration (EMPC) results, when the value is greater than the EDL, the EMPC value must be used in determination of TEQ, when the EMPC is less than the EDL, zero may be used.

(3) For BOPF tests, the test runs must include at least one full production cycle (from scrap charge to 3 minutes after slag is emptied from the vessel) for each run, except for BOPF with closed hood systems, where sampling should be performed only during the primary oxygen blow and only for 20 heat cycles or the collection of 105 dscf (3 dscm) sample volume, whichever is less.

(4) Calculate the sum of the D/F TEQ per ton of throughput processed (tons of product sinter or tons of steel) to determine initial compliance with the emission limits in table 1 using equation 3 to this paragraph (j)(4) as follows:

Equation 3 to paragraph (j)(4)

$$TEQ = \frac{\sum_{i=1}^{n}(M_i \times TEF_i)}{T_r \times P} \text{ (Eq. 3)}$$

Where:

TEQ = sum of the 2,3,7,8-TCDD TEQs, lb/ton of throughput processed
M_i = mass of dioxin or furan cogener i during performance test run, lbs
TEF_i = 2,3,7,8-TCDD toxic equivalency factor (TEF) for cogener i, as provided in Table 5 of this subpart
n = number of cogeners included in TEQ
T_r = time of performance test run, hours
P = production rate during performance test run, tons of throughput processed per hour.

(k) To demonstrate compliance with the emission limit for polycyclic aromatic hydrocarbons in table 1 to this subpart through performance testing, follow the test methods and procedures in paragraphs (k)(1) through (3) of this section.

(1) Determine the concentration of each polycyclic aromatic hydrocarbon listed in table 6 to this subpart according to the following test methods:

(i) The methods specified in paragraphs (b)(1)(i) through (iv) of this section, and

(ii) EPA Method 23 in appendix A–7 to part 60 of this chapter to determine the concentration of each polycyclic aromatic hydrocarbon listed in table 6 to this subpart from the exhaust stream stack of each unit. You must collect a minimum sample volume of 105 dscf (3 dscm) of gas during each test run.

(2) Three valid test runs are needed to comprise a performance test of each unit in table 1 to this subpart. If the performance testing results for any of the emission points yields a non-detect value, then the EDL must be used to calculate the mass emissions (lb) for that unit and, in turn, for calculating the emissions rate (lb/ton of product sinter).

(3) Calculate the sum of polycyclic aromatic hydrocarbons per ton of product sinter to determine initial compliance with the emission limits in table 1 to this subpart using equation 4 to this paragraph (k)(3) as follows:

Equation 4 to paragraph (k)(3)

$$E = \frac{\sum_{i=1}^{n} M_i}{T_r \times P} \text{ (Eq. 4)}$$

Where:

E = emission rate of polycyclic aromatic hydrocarbons, lb/ton of sinter
M_i = mass of polycyclic aromatic hydrocarbon i, as provided in Table 6 to this subpart, during performance test run, lbs
n = number of polycyclic aromatic hydrocarbons included in emissions
T_r = time of performance test run, hours
P = production rate during performance test run, tons of product sinter per hour.

■ 13. Amend § 63.7830 by revising paragraph (e)(2) to read as follows:

§ 63.7830 What are my monitoring requirements?

* * * * *

(e) * * *

(2) Compute and record the 30-day rolling average of the volatile organic compound emissions (lbs/ton of sinter) for each operating day using the procedures in § 63.7824(e).

■ 14. Amend § 63.7833 by adding paragraph (j) to read as follows:

§ 63.7833 How do I demonstrate continuous compliance with the emission limitations that apply to me?

* * * * *

* * * * *

(j) For large bells on each blast furnace, you must demonstrate continuous compliance by following the requirements specified in paragraphs (j)(1) and (2) of this section if a bell seal exceeds a 20 percent average of 3 instantaneous opacity readings of the interbell relief valve emissions.

(1) Initiate corrective action within five business days.

(2) Ten business days after the initial opacity exceedance of 20 percent, if the average of 3 instantaneous visible emissions readings from this test exceeds 20 percent, you must repair or replace that bell seal within 4 months.

■ 15. Amend § 63.7840 by removing paragraphs (g)(3) and (h)(3) and adding paragraph (i).

The addition reads as follows:

§ 63.7840 What notifications must I submit and when?

* * * * *

(i) Confidential business information (CBI): For notifications and reports required to be submitted to CEDRI:

(1) The EPA will make all the information submitted through CEDRI available to the public without further notice to you. Do not use CEDRI to submit information you claim as CBI. Although we do not expect persons to assert a claim of CBI, if you wish to assert a CBI claim for some of the information submitted under paragraph (h) of this section, you must submit a complete file, including information claimed to be CBI, to the EPA.

(2) The file must be generated using the EPA's ERT or an alternate electronic file consistent with the XML schema listed on the EPA's ERT website.

(3) Clearly mark the part or all of the information that you claim to be CBI. Information not marked as CBI may be authorized for public release without prior notice. Information marked as CBI will not be disclosed except in accordance with procedures set forth in 40 CFR part 2.

(4) The preferred method to receive CBI is for it to be transmitted electronically using email attachments, File Transfer Protocol, or other online file sharing services. Electronic submissions must be transmitted directly to the OAQPS CBI Office at the email address *oaqpscbi@epa.gov,* and as described above, should include clear CBI markings and be flagged to the attention of the Group Leader, Measurement Policy Group. If assistance is needed with submitting large electronic files that exceed the file size limit for email attachments, and if you do not have your own file sharing service, please email *oaqpscbi@epa.gov* to request a file transfer link.

(5) If you cannot transmit the file electronically, you may send CBI information through the postal service to the following address: OAQPS Document Control Officer (C404–02), OAQPS, U.S. Environmental Protection

Agency, Research Triangle Park, North Carolina 27711, Attention Group Leader, Measurement Policy Group. The mailed CBI material should be double wrapped and clearly marked. Any CBI markings should not show through the outer envelope.

(6) All CBI claims must be asserted at the time of submission. Anything submitted using CEDRI cannot later be claimed CBI. Furthermore, under CAA section 114(c), emissions data is not entitled to confidential treatment, and the EPA is required to make emissions data available to the public. Thus, emissions data will not be protected as CBI and will be made publicly available.

(7) You must submit the same file submitted to the CBI office with the CBI omitted to the EPA via the EPA's CDX as described in paragraphs (g) or (h) of this section.

■ 16. Amend § 63.7841 by adding paragraph (b)(14), revising paragraph (d), and adding paragraph (h) to read as follows:

§ 63.7841 What reports must I submit and when?

* * * * *

(b) * * *

(14) For each unplanned bleeder valve opening for each blast furnace, you must include the information in paragraphs (b)(14)(i) through (iii) of this section.

(i) The date and time of the event.

(ii) The duration of the event.

(iii) Any corrective actions taken in response to the event.

* * * * *

(d) *CEDRI submission.* If you are required to submit reports following the procedure specified in this paragraph, you must submit reports to the EPA via CEDRI, which can be accessed through EPA's CDX (*https://cdx.epa.gov/*). You must use the appropriate electronic report template on the CEDRI website (*https://www.epa.gov/electronic-reporting-air-emissions/compliance-and-emissions-data-reporting-interface-cedri*) for this subpart. The date report templates become available will be listed on the CEDRI website. The report must be submitted by the deadline specified in this subpart, regardless of the method in which the report is submitted. Do not use CEDRI to submit information you claim as CBI. Although we do not expect persons to assert a claim of CBI, if you wish to assert a CBI claim for some of the information in the report, you must submit a complete file, including information claimed to be CBI, to the EPA following the procedures in paragraphs (d)(1) and (2) of this section. Clearly mark the part or all of the information that you claim to be CBI. Information not marked as CBI may be authorized for public release without prior notice. Information marked as CBI will not be disclosed except in accordance with procedures set forth in 40 CFR part 2. All CBI claims must be asserted at the time of submission. Anything submitted using CEDRI cannot later be claimed CBI. Furthermore, under CAA section 114(c), emissions data is not entitled to confidential treatment, and the EPA is required to make emissions data available to the public. Thus, emissions data will not be protected as CBI and will be made publicly available. You must submit the same file submitted to the CBI office with the CBI omitted to the EPA via the EPA's CDX as described earlier in this paragraph.

(1) The preferred method to receive CBI is for it to be transmitted electronically using email attachments, File Transfer Protocol, or other online file sharing services. Electronic submissions must be transmitted directly to the OAQPS CBI Office at the email address *oaqpscbi@epa.gov,* and as described above, should include clear CBI markings and be flagged to the attention of the Integrated Iron and Steel Sector Lead. If assistance is needed with submitting large electronic files that exceed the file size limit for email attachments, and if you do not have your own file sharing service, please email *oaqpscbi@epa.gov* to request a file transfer link.

(2) If you cannot transmit the file electronically, you may send CBI information through the postal service to the following address: OAQPS Document Control Officer (C404–02), OAQPS, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, Attention Integrated Iron and Steel Sector Lead. The mailed CBI material should be double wrapped and clearly marked. Any CBI markings should not show through the outer envelope.

* * * * *

(h) *Fenceline monitoring reports.* For fenceline monitoring systems subject to § 63.7792, each owner or operator must submit Fenceline Monitoring Reports on a quarterly basis using the appropriate electronic report template on the CEDRI website (*https://www.epa.gov/electronic-reporting-air-emissions/cedri*) for this subpart and following the procedure specified in paragraph (d) of this section. The first quarterly report must be submitted once the owner or operator has obtained 12 months of data. The first quarterly report must cover the period beginning on the date one year after the promulgation of the metals fenceline method and ending on March 31, June 30, September 30 or December 31, whichever date is the first date that occurs after the owner or operator has obtained 12 months of data (*i.e.,* the first quarterly report will contain between 12 and 15 months of data). Each subsequent quarterly report must cover one of the following reporting periods: Quarter 1 from January 1 through March 31; Quarter 2 from April 1 through June 30; Quarter 3 from July 1 through September 30; and Quarter 4 from October 1 through December 31. Each quarterly report must be electronically submitted no later than 45 calendar days following the end of the reporting period.

(1) Facility name and address.

(2) Year and reporting quarter (*i.e.,* Quarter 1, Quarter 2, Quarter 3, or Quarter 4).

(3) For each sampler: The latitude and longitude location coordinates; the sampler name; and identification of the type of sampler (*e.g.,* regular monitor, extra monitor, duplicate, field blank, inactive). Coordinates shall be in decimal degrees with at least five decimal places.

(4) The beginning and ending dates for each sampling period.

(5) Individual sample results for each monitored compound, reported in units of $\mu g/m^3$, for each monitor for each sampling period that ends during the reporting period. Results below the method detection limit shall be flagged as below the detection limit and reported at the method detection limit.

(6) Data flags for each outlier determined in accordance with the fenceline metals method. For each outlier, the owner or operator must submit the individual sample result of the outlier, as well as the evidence used to conclude that the result is an outlier.

(7) The biweekly concentration difference (Δc) for each sampling period and the annual average Δc for each sampling period.

(8) Indication of whether the owner or operator was required to develop a corrective action plan under § 63.7792(e).

■ 17. Amend § 63.7842 by revising paragraph (d) and adding paragraphs (f) and (g) to read as follows.

§ 63.7842 What records must I keep?

* * * * *

(d) You must keep the records required in §§ 63.7823, 63.7833, and 63.7834 to show continuous compliance with each emission limitation and operation and maintenance requirement that applies to you. This includes a record of each large and small bell repair and replacement, a record of the date on which the large bell opacity has

exceeded 20 percent, and the most current time period or throughput over which no opacity was observed from the small bell.

* * * * *

(f) For fenceline monitoring systems subject to § 63.7792 of this subpart, each owner or operator must keep the records specified in paragraphs (f)(1) through (11) of this section.

(1) Coordinates of samplers, including co-located samplers and field blanks, and if applicable, the meteorological station. The owner or operator shall determine the coordinates using an instrument with an accuracy of at least 3 meters. The coordinates shall be in decimal degrees with at least five decimal places.

(2) The start and stop times and dates for each sample, as well as the sample identifying information.

(3) Sampling period average temperature and barometric pressure measurements.

(4) For each outlier determined in accordance with the procedures specified in the fenceline metals method, the sampler location and the concentration of the outlier and the evidence used to conclude that the result is an outlier.

(5) For samples that will be adjusted for uniform background, the location of and the concentration measured simultaneously by the background sampler, and the perimeter samplers to which it applies.

(6) Individual sample results, the calculated Δc for each sampling period and the two samples used to determine it, whether background correction was used, and the annual average Δc calculated after each sampling period.

(7) Method detection limit for each sample, including co-located samples and blanks.

(8) Documentation of the root cause analysis and any resulting corrective action taken each time an action level is exceeded, including the dates the root cause analysis was initiated and the resulting correction action(s) were taken.

(9) Any corrective action plan developed under § 63.7792(e).

(10) Other records as required by the sampling method.

(11) If a near-field source correction is used as provided in § 63.7792(f), or if an alternative test method is used that provides time-resolved measurements, records of hourly meteorological data, including temperature, barometric pressure, wind speed and wind direction, calculated daily unit vector wind direction, and daily sigma theta, and other records specified in the site-specific monitoring plan.

(g) For each unplanned bleeder valve opening for each blast furnace, you must keep the records specified in paragraphs (g)(1) through (3) of this section.

(1) The start date and start time of the event.

(2) The duration of the event in minutes.

(3) Any corrective actions taken in response to the event.

■ 18. Amend § 63.7852 by adding definitions for ''Iron beaching operation'', Large blast furnace'', ''Planned bleeder valve opening'', ''Slip'', ''Small blast furnace'', ''Total hydrocarbons (THC)'', and ''Unplanned bleeder valve opening'' to read as follows:

§ 63.7852 What definitions apply to this subpart?

* * * * *

Iron beaching operation means pouring hot molten iron from a torpedo car onto the ground when the iron from the blast furnace cannot be charged to the basic oxygen process furnace.

* * * * *

Large blast furnace means a blast furnace with a working volume of greater than 2,500 m^3.

* * * * *

Planned bleeder valve opening means the opening of a blast furnace pressure relief safety valve that is initiated by an operator.

* * * * *

Slip means when raw materials loaded in the top of the furnace fail to descend smoothly in the furnace and bind together to form a ''bridge'' which than ''hangs'' (*i.e.,* accumulates) in one position in the furnace. When a ''hang'' eventually falls, or ''slips,'' it creates a pressure surge that may open the bleeder valves, releasing emissions in the form of a large dust cloud.

Small blast furnace means a blast furnace with a working volume of less than 2,500 m^3.

* * * * *

Total hydrocarbons (THC) means the sum of organic compounds measured as carbon using EPA Method 25A (appendix A–7 to part 60 of this chapter).

Unplanned bleeder valve opening means the opening of a blast furnace pressure relief safety valve that is not a planned bleeder valve opening.

* * * * *

■ 19. Revise tables 1 through 4 to subpart FFFFF to read as follows:

Table 1 to Subpart FFFFF of Part 63—Emission, Opacity, and Work Practice Limits

As required in § 63.7790(a), you must comply with each applicable emission, opacity, and work practice limit in the following table:

For . . .	You must comply with each of the following . . .
1. Each windbox exhaust stream at an existing sinter plant.	a. You must not cause to be discharged to the atmosphere any gases that contain particulate matter in excess of 0.4 lb/ton of product sinter; b. You must not cause to be discharged to the atmosphere any gases that contain mercury in excess of 0.000018 lb/ton of product sinter; c. You must not cause to be discharged to the atmosphere any gases that contain hydrogen chloride in excess of 0.025 lb/ton of product sinter; d. You must not cause to be discharged to the atmosphere any gases that contain carbonyl sulfide in excess of 0.064 lb/ton of product sinter; e. You must not cause to be discharged to the atmosphere any gases that contain D/F TEQs in excess of 1.1E–08 lb/ton of product sinter; and f. You must not cause to be discharged to the atmosphere any gases that contain polycyclic aromatic hydrocarbons in excess of 0.0018 lb/ton of product sinter.
2. Each windbox exhaust stream at a new sinter plant.	a. You must not cause to be discharged to the atmosphere any gases that contain particulate matter in excess of 0.3 lb/ton of product sinter; b. You must not cause to be discharged to the atmosphere any gases that contain mercury in excess of 0.000012 lb/ton of product sinter; c. You must not cause to be discharged to the atmosphere any gases that contain hydrogen chloride in excess of 0.0012 lb/ton of product sinter; d. You must not cause to be discharged to the atmosphere any gases that contain carbonyl sulfide in excess of 0.030 lb/ton of product sinter; e. You must not cause to be discharged to the atmosphere any gases that contain D/F TEQs in excess of 1.1E–08 lb/ton of product sinter; and

For . . .	You must comply with each of the following . . .
	f. You must not cause to be discharged to the atmosphere any gases that contain polycyclic aromatic hydrocarbons in excess of 0.0015 lb/ton of product sinter.
3. Each discharge end at an existing sinter plant.	a. You must not cause to be discharged to the atmosphere any gases that exit from one or more control devices that contain, on a flow-weighted basis, particulate matter in excess of 0.02 gr/dscf; [1 2] and b. You must not cause to be discharged to the atmosphere any secondary emissions that exit any opening in the building or structure housing the discharge end that exhibit opacity greater than 20 percent (6-minute average).
4. Each discharge end at a new sinter plant.	a. You must not cause to be discharged to the atmosphere any gases that exit from one or more control devices that contain, on a flow weighted basis, particulate matter in excess of 0.01 gr/dscf; and b. You must not cause to be discharged to the atmosphere any secondary emissions that exit any opening in the building or structure housing the discharge end that exhibit opacity greater than 10 percent (6-minute average).
5. Each sinter cooler at an existing sinter plant.	You must not cause to be discharged to the atmosphere any emissions that exhibit opacity greater than 10 percent (6-minute average).
6. Each sinter cooler at a new sinter plant.	You must not cause to be discharged to the atmosphere any gases that contain particulate matter in excess of 0.01 gr/dscf.
7. Each casthouse at an existing blast furnace.	a. You must not cause to be discharged to the atmosphere any gases that exit from a control device that contain particulate matter in excess of 0.01 gr/dscf; [2] b. You must not cause to be discharged to the atmosphere any secondary emissions that exit all openings in the casthouse or structure housing the blast furnace that exhibit opacity greater than 20 percent (6-minute average); c. You must not cause to be discharged to the atmosphere any gases that exit from a control device that contain hydrogen chloride in excess of 0.0056 lb/ton of iron; d. You must not cause to be discharged to the atmosphere any gases that exit from a control device that contain total hydrocarbons as propane in excess of 0.48 lb/ton of iron; and e. You must not cause unplanned bleeder valve openings in excess of 4 events per year for large blast furnaces or 15 events per year for small blast furnaces.
8. Each casthouse at a new blast furnace.	a. You must not cause to be discharged to the atmosphere any gases that exit from a control device that contain particulate matter in excess of 0.003 gr/dscf; and b. You must not cause to be discharged to the atmosphere any secondary emissions that exit all openings in the casthouse or structure housing the blast furnace that exhibit opacity greater than 15 percent (6-minute average); c. You must not cause to be discharged to the atmosphere any gases that exit from a control device that contain hydrogen chloride in excess of 0.00059 lb/ton of iron; d. You must not cause to be discharged to the atmosphere any gases that exit from a control device that contain total hydrocarbons as propane in excess of 0.035 lb/ton of iron; and e. You must not cause unplanned bleeder valve openings in excess of zero events per year.
9. Each BOPF at a new or existing shop	a. You must not cause to be discharged to the atmosphere any gases that exit from a primary emission control system for a BOPF with a closed hood system at a new or existing BOPF shop that contain, on a flow-weighted basis, particulate matter in excess of 0.03 gr/dscf during the primary oxygen blow; [2 3] b. You must not cause to be discharged to the atmosphere any gases that exit from a primary emission control system for a BOPF with an open hood system that contain, on a flow-weighted basis, particulate matter in excess of 0.02 gr/dscf during the steel production cycle for an existing BOPF shop [2 3] or 0.01 gr/dscf during the steel production cycle for a new BOPF shop; [3] c. You must not cause to be discharged to the atmosphere any gases that exit from a control device used solely for the collection of secondary emissions from the BOPF that contain particulate matter in excess of 0.01 gr/dscf for an existing BOPF shop [2] or 0.0052 gr/dscf for a new BOPF shop; d. You must not cause to be discharged to the atmosphere any gases that exit from a primary emission control system for a BOPF that contain hydrogen chloride in excess of 0.058 lb/ton of steel for existing sources and 2.8E–04 lb/ton steel for new sources; e. You must not cause to be discharged to the atmosphere any gases that exit from a primary emission control system for a BOPF that contain THC as propane in excess of 0.04 lb/ton of steel for existing sources and 0.0017 lb/ton of steel for new sources; and f. You must not cause to be discharged to the atmosphere any gases that exit from a primary emission control system for a BOPF that contain D/F TEQs in excess of 9.2E–10 lb/ton of steel.
10. Each hot metal transfer, skimming, and desulfurization operation at a new or existing BOPF shop.	You must not cause to be discharged to the atmosphere any gases that exit from a control device that contain particulate matter in excess of 0.01 gr/dscf for an existing BOPF shop [2] or 0.003 gr/dscf for a new BOPF shop.
11. Each ladle metallurgy operation at a new or existing BOPF shop.	You must not cause to be discharged to the atmosphere any gases that exit from a control device that contain particulate matter in excess of 0.01 gr/dscf for an existing BOPF shop [2] or 0.004 gr/dscf for a new BOPF shop.
12. Each existing BOPF shop	You must not cause to be discharged to the atmosphere any secondary emissions that exit any opening in the BOPF shop or any other building housing the BOPF or BOPF shop operation that exhibit opacity greater than 20 percent (3-minute average).
13. Each new BOPF shop	a. You must not cause to be discharged to the atmosphere any secondary emissions that exit any opening in the BOPF shop or other building housing a bottom-blown BOPF or BOPF shop operations that exhibit opacity (for any set of 6-minute averages) greater than 10 percent, except that one 6-minute period not to exceed 20 percent may occur once per steel production cycle; or b. You must not cause to be discharged to the atmosphere any secondary emissions that exit any opening in the BOPF shop or other building housing a top-blown BOPF or BOPF shop operations that exhibit opacity (for any set of 3-minute averages) greater than 10 percent, except that one 3-minute period greater than 10 percent but less than 20 percent may occur once per steel production cycle.
14. Each BOPF Group at an existing BOPF shop.	You must not cause to be discharged to the atmosphere any gases that exit from the collection of BOPF Group control devices that contain mercury in excess of 0.00026 lb/ton of steel scrap input to the BOPF.
15. Each BOPF Group at a new BOPF shop.	You must not cause to be discharged to the atmosphere any gases that exit from the collection of BOPF Group control devices that contain mercury in excess of 0.000081 lb/ton of steel scrap input to the BOPF.
16. Each planned bleeder valve opening at a new or existing blast furnace.	You must not cause to be discharged to the atmosphere any emissions that exhibit opacity greater than 8 percent (6-minute average).
17. Each slag processing, handling and storage operation for a new or existing blast furnace or BOPF.	You must not cause to be discharged to the atmosphere any emissions that exhibit opacity greater than 10 percent (6-minute average).
18. Each existing blast furnace stove	a. You must not cause to be discharged to the atmosphere any gases that exit from a control device that contain HCl in excess of 0.0012 lb/MMBtu; and b. You must not cause to be discharged to the atmosphere any gases that exit from a control device that contain THC in excess of 0.12 lb/MMBtu.
19. Each new blast furnace stove	a. You must not cause to be discharged to the atmosphere any gases that exit from a control device that contain HCl in excess of 4.2e–4 lb/MMBtu; and

For . . .	You must comply with each of the following . . .
	b. You must not cause to be discharged to the atmosphere any gases that exit from a control device that contain THC in excess of 0.0054 lb/MMBtu.

[1] This limit applies if the cooler is vented to the same control device as the discharge end.
[2] This concentration limit (gr/dscf) for a control device does not apply to discharges inside a building or structure housing the discharge end at an existing sinter plant, inside a casthouse at an existing blast furnace, or inside an existing BOPF shop if the control device was installed before August 30, 2005.
[3] This limit applies to control devices operated in parallel for a single BOPF during the oxygen blow.

Table 2 to Subpart FFFFF of Part 63—Initial Compliance With Emission and Opacity Limits

As required in § 63.7826(a)(1), you must demonstrate initial compliance with the emission and opacity limits according to the following table:

For . . .	You have demonstrated initial compliance if . . .
1. Each windbox exhaust stream at an existing sinter plant.	a. The process-weighted mass rate of particulate matter from a windbox exhaust stream, measured according to the performance test procedures in § 63.7822(c), did not exceed 0.4 lb/ton of product sinter; b. The process-weighted mass rate of mercury from a windbox exhaust stream, measured according to the performance test procedures in § 63.7825, did not exceed 0.000018 lb/ton of product sinter; c. The process-weighted mass rate of hydrogen chloride from a windbox exhaust stream, measured according to the performance test procedures in § 63.7825, did not exceed 0.025 lb/ton of product sinter; d. The process-weighted mass rate of carbonyl sulfide from a windbox exhaust stream, measured according to the performance test procedures in § 63.7825, did not exceed 0.064 lb/ton of product sinter; e. The process-weighted mass rate of D/F TEQs from a windbox exhaust stream, measured according to the performance test procedures in § 63.7825, did not exceed 1.1E–08 lb/ton of product sinter; and f. The process-weighted mass rate of polycyclic aromatic hydrocarbons from a windbox exhaust stream, measured according to the performance test procedures in § 63.7825, did not exceed 0.0018 lb/ton of product sinter.
2. Each windbox exhaust stream at a new sinter plant.	a. The process-weighted mass rate of particulate matter from a windbox exhaust stream, measured according to the performance test procedures in § 63.7822(c), did not exceed 0.3 lb/ton of product sinter; b. The process-weighted mass rate of mercury from a windbox exhaust stream, measured according to the performance test procedures in § 63.7825, did not exceed 0.000012 lb/ton of product sinter; c. The process-weighted mass rate of hydrogen chloride from a windbox exhaust stream, measured according to the performance test procedures in § 63.7825, did not exceed 0.0012 lb/ton of product sinter; d. The process-weighted mass rate of carbonyl sulfide from a windbox exhaust stream, measured according to the performance test procedures in § 63.7825, did not exceed 0.030 lb/ton of product sinter; e. The process-weighted mass rate of D/F TEQs from a windbox exhaust stream, measured according to the performance test procedures in § 63.7825, did not exceed 1.1E–08 lb/ton of product sinter; and f. The process-weighted mass rate of polycyclic aromatic hydrocarbons from a windbox exhaust stream, measured according to the performance test procedures in § 63.7825, did not exceed 0.0015 lb/ton of product sinter.
3. Each discharge end at an existing sinter plant.	a. The flow-weighted average concentration of particulate matter from one or more control devices applied to emissions from a discharge end, measured according to the performance test procedures in § 63.7822(d), did not exceed 0.02 gr/dscf; and b. The opacity of secondary emissions from each discharge end, determined according to the performance test procedures in § 63.7823(c), did not exceed 20 percent (6-minute average).
4. Each discharge end at a new sinter plant.	a. The flow-weighted average concentration of particulate matter from one or more control devices applied to emissions from a discharge end, measured according to the performance test procedures in § 63.7822(d), did not exceed 0.01 gr/dscf; and b. The opacity of secondary emissions from each discharge end, determined according to the performance test procedures in § 63.7823(c), did not exceed 10 percent (6-minute average).
5. Each sinter cooler at an existing sinter plant.	The opacity of emissions, determined according to the performance test procedures in § 63.7823(e), did not exceed 10 percent (6-minute average).
6. Each sinter cooler at a new sinter plant.	The average concentration of particulate matter, measured according to the performance test procedures in § 63.7822(b), did not exceed 0.01 gr/dscf.
7. Each casthouse at an existing blast furnace.	a. The average concentration of particulate matter from a control device applied to emissions from a casthouse, measured according to the performance test procedures in § 63.7822(e), did not exceed 0.01 gr/dscf; b. The opacity of secondary emissions from each casthouse, determined according to the performance test procedures in § 63.7823(c), did not exceed 20 percent (6-minute average); c. The process-weighted mass rate of hydrogen chloride from a windbox exhaust stream, measured according to the performance test procedures in § 63.7825, did not exceed 0.0056 lb/ton of iron; d. The process-weighted mass rate of total hydrocarbons from a windbox exhaust stream, measured according to the performance test procedures in § 63.7825, did not exceed 0.48 lb/ton of iron; and e. The number of unplanned bleeder valve openings in one year, as reported according to the specifications in § 63.7841(b)(14), did not exceed 4 events for large blast furnaces or 15 events for small blast furnaces.
8. Each casthouse at a new blast furnace.	a. The average concentration of particulate matter from a control device applied to emissions from a casthouse, measured according to the performance test procedures in § 63.7822(e), did not exceed 0.003 gr/dscf; and b. The opacity of secondary emissions from each casthouse, determined according to the performance test procedures in § 63.7823(c), did not exceed 15 percent (6-minute average); c. The process-weighted mass rate of hydrogen chloride from a windbox exhaust stream, measured according to the performance test procedures in § 63.7825, did not exceed 0.00059 lb/ton of iron; d. The process-weighted mass rate of total hydrocarbons from a windbox exhaust stream, measured according to the performance test procedures in § 63.7825, did not exceed 0.035 lb/ton of iron; and e. The number of unplanned bleeder valve openings in one year, as reported according to the specifications in § 63.7841(b)(14), did not exceed zero events.
9. Each BOPF at a new or existing BOPF shop.	a. The average concentration of particulate matter from a primary emission control system applied to emissions from a BOPF with a closed hood system, measured according to the performance test procedures in § 63.7822(f), did not exceed 0.03 gr/dscf for a new or existing BOPF shop; b. The average concentration of particulate matter from a primary emission control system applied to emissions from a BOPF with an open hood system, measured according to the performance test procedures in § 63.7822(g), did not exceed 0.02 gr/dscf for an existing BOPF shop or 0.01 gr/dscf for a new BOPF shop;

For . . .	You have demonstrated initial compliance if . . .
	c. The average concentration of particulate matter from a control device applied solely to secondary emissions from a BOPF, measured according to the performance test procedures in § 63.7822(g), did not exceed 0.01 gr/dscf for an existing BOPF shop or 0.0052 gr/dscf for a new BOPF shop; d. The process-weighted mass rate of hydrogen chloride from a windbox exhaust stream, measured according to the performance test procedures in § 63.7825, did not exceed 0.058 lb/ton of steel for an existing BOPF shop or 0.00028 lb/ton of steel for a new BOPF shop; e. The process-weighted mass rate of total hydrocarbons from a windbox exhaust stream, measured according to the performance test procedures in § 63.7825, did not exceed 0.04 lb/ton of steel for an existing BOPF shop or 0.0017 lb/ton of steel for a new BOPF shop; and f. The process-weighted mass rate of D/F TEQs from a windbox exhaust stream, measured according to the performance test procedures in § 63.7825, did not exceed 9.2e–10 lb/ton of steel.
10. Each hot metal transfer skimming, and desulfurization at a new or existing BOPF shop.	The average concentration of particulate matter from a control device applied to emissions from hot metal transfer, skimming, or desulfurization, measured according to the performance test procedures in § 63.7822(h), did not exceed 0.01 gr/dscf for an existing BOPF shop or 0.003 gr/dscf for a new BOPF shop.
11. Each ladle metallurgy operation at a new or existing BOPF shop.	The average concentration of particulate matter from a control device applied to emissions from a ladle metallurgy operation, measured according to the performance test procedures in § 63.7822(h), did not exceed 0.01 gr/dscf for an existing BOPF shop or 0.004 gr/dscf for a new BOPF shop.
12. Each existing BOPF shop	The opacity of secondary emissions from each BOPF shop, determined according to the performance test procedures in § 63.7823(d), did not exceed 20 percent (3-minute average).
13. Each new BOPF shop	a. The opacity of the highest set of 6-minute averages from each BOPF shop housing a bottom-blown BOPF, determined according to the performance test procedures in § 63.7823(d), did not exceed 20 percent and the second highest set of 6-minute averages did not exceed 10 percent; or b. The opacity of the highest set of 3-minute averages from each BOPF shop housing a top-blown BOPF, determined according to the performance test procedures in § 63.7823(d), did not exceed 20 percent and the second highest set of 3-minute averages did not exceed 10 percent.
14. Each BOPF Group at an existing BOPF shop.	If demonstrating compliance through performance testing, the average emissions of mercury from the collection of BOPF Group control devices applied to the emissions from the BOPF Group, measured according to the performance test procedures in § 63.7825, did not exceed 0.00026 lb/ton steel scrap input to the BOPF.
15. Each BOPF Group at a new BOPF shop.	If demonstrating compliance through performance testing, the average emissions of mercury from the collection of BOPF Group control devices applied to the emissions from the BOPF Group, measured according to the performance test procedures in § 63.7825, did not exceed 0.000081 lb/ton steel scrap input to the BOPF.
16. Each planned bleeder valve opening at a new or existing blast furnace.	The opacity of emissions, determined according to the performance test procedures in § 63.7823(f), did not exceed 8 percent (6-minute average).
17. Each slag processing, handling and storage operation for a new or existing blast furnace or BOPF.	The opacity of emissions, determined according to the performance test procedures in § 63.7823(g), did not exceed 10 percent (6-minute average).
18. Each existing blast furnace stove	a. The process-weighted mass rate of HCl from a windbox exhaust stream, measured according to the performance test procedures in § 63.7825, did not exceed 0.0012 lb/MMBtu; and b. The process-weighted mass rate of THC from a windbox exhaust stream, measured according to the performance test procedures in § 63.7825, did not exceed 0.12 lb/MMBtu.
19. Each new blast furnace stove	a. The process-weighted mass rate of HCl from a windbox exhaust stream, measured according to the performance test procedures in § 63.7825, did not exceed 4.2e–4 lb/MMBtu; and b. The process-weighted mass rate of THC from a windbox exhaust stream, measured according to the performance test procedures in § 63.7825, did not exceed 0.0054 lb/MMBtu.

Table 3 to Subpart FFFFF of Part 63—Continuous Compliance With Emission and Opacity Limits

As required in § 63.7833(a), you must demonstrate continuous compliance with the emission and opacity limits according to the following table:

For . . .	You must demonstrate continuous compliance by . . .
1. Each windbox exhaust stream at an existing sinter plant.	a. Maintaining emissions of particulate matter at or below 0.4 lb/ton of product sinter; b. Conducting subsequent performance tests at the frequencies specified in § 63.7821; c. Maintaining emissions of mercury at or below 0.000018 lb/ton of product sinter; d. Maintaining emissions of hydrogen chloride at or below 0.025 lb/ton of product sinter; e. Maintaining emissions of carbonyl sulfide at or below 0.064 lb/ton of product sinter; f. Maintaining emissions of D/F TEQs at or below 1.1E–08 lb/ton of product sinter; and g. Maintaining emissions of polycyclic aromatic hydrocarbons at or below 0.0018 lb/ton of product sinter.
2. Each windbox exhaust stream at a new sinter plant.	a. Maintaining emissions of particulate matter at or below 0.3 lb/ton of product sinter; b. Conducting subsequent performance tests at the frequencies specified in § 63.7821; c. Maintaining emissions of mercury at or below 0.000012 lb/ton of product sinter; d. Maintaining emissions of hydrogen chloride at or below 0.0012 lb/ton of product sinter; e. Maintaining emissions of carbonyl sulfide at or below 0.030 lb/ton of product sinter; f. Maintaining emissions of D/F TEQs at or below 1.1E–08 lb/ton of product sinter; and g. Maintaining emissions of polycyclic aromatic hydrocarbons at or below 0.0015 lb/ton of product sinter.
3. Each discharge end at an existing sinter plant.	a. Maintaining emissions of particulate matter from one or more control devices at or below 0.02 gr/dscf; and b. Maintaining the opacity of secondary emissions that exit any opening in the building or structure housing the discharge end at or below 20 percent (6-minute average); and c. Conducting subsequent performance tests at the frequencies specified in § 63.7821.
4. Each discharge end at a new sinter plant.	a. Maintaining emissions of particulate matter from one or more control devices at or below 0.01 gr/dscf; and b. Maintaining the opacity of secondary emissions that exit any opening in the building or structure housing the discharge end at or below 10 percent (6-minute average); and c. Conducting subsequent performance tests at the frequencies specified in § 63.7821.
5. Each sinter cooler at an existing sinter plant.	a. Maintaining the opacity of emissions that exit any sinter cooler at or below 10 percent (6-minute average); and b. Conducting subsequent performance tests at the frequencies specified in § 63.7821.
6. Each sinter cooler at a new sinter plant.	a. Maintaining emissions of particulate matter at or below 0.1 gr/dscf; and

For . . .	You must demonstrate continuous compliance by . . .
	b. Conducting subsequent performance tests at the frequencies specified in § 63.7821.
7. Each casthouse at an existing blast furnace.	a. Maintaining emissions of particulate matter from a control device at or below 0.01 gr/dscf; b. Maintaining the opacity of secondary emissions that exit all openings in the casthouse or structure housing the casthouse at or below 20 percent (6-minute average); c. Conducting subsequent performance tests at the frequencies specified in § 63.7821; d. Maintaining emissions of hydrogen chloride at or below 0.0056 lb/ton of iron; e. Maintaining emissions of total hydrocarbons at or below 0.48 lb/ton of iron; and f. Maintaining unplanned bleeder valve openings at or below 4 events per year for large blast furnaces or 15 events per year for small blast furnaces.
8. Each casthouse at a new blast furnace.	a. Maintaining emissions of particulate matter from a control device at or below 0.003 gr/dscf; b. Maintaining the opacity of secondary emissions that exit all openings in the casthouse or structure housing the casthouse at or below 15 percent (6-minute average); c. Conducting subsequent performance tests at the frequencies specified in § 63.7821; d. Maintaining emissions of hydrogen chloride at or below 0.00059 lb/ton of iron; e. Maintaining emissions of total hydrocarbons at or below 0.035 lb/ton of iron; and f. Maintaining unplanned bleeder valve openings at zero events per year.
9. Each BOPF at a new or existing BOPF shop.	a. Maintaining emissions of particulate matter from the primary control system for a BOPF with a closed hood system at or below 0.03 gr/dscf; b. Maintaining emissions of particulate matter from the primary control system for a BOPF with an open hood system at or below 0.02 gr/dscf for an existing BOPF shop or 0.01 gr/dscf for a new BOPF shop; c. Maintaining emissions of particulate matter from a control device applied solely to secondary emissions from a BOPF at or below 0.01 gr/dscf for an existing BOPF shop or 0.0052 gr/dscf for a new BOPF shop; d. Conducting subsequent performance tests at the frequencies specified in § 63.7821; e. Maintaining emissions of hydrogen chloride from a primary emission control system for a BOPF at or below 0.058 lb/ton of steel for existing sources and 2.8E–04 lb/ton steel for new sources; f. Maintaining emissions of THC from a primary emission control system for a BOPF at or below 0.04 lb/ton of steel for existing sources and 0.0017 lb/ton of steel for new sources; and g. Maintaining emissions of D/F TEQs from a primary emission control system for a BOPF at or below 9.2E–10 lb/ton of steel.
10. Each hot metal transfer, skimming, and desulfurization operation at a new or existing BOPF shop.	a. Maintaining emissions of particulate matter from a control device at or below 0.01 gr/dscf at an existing BOPF or 0.003 gr/dscf for a new BOPF; and b. Conducting subsequent performance tests at the frequencies specified in § 63.7821.
11. Each ladle metallurgy operation at a new or existing BOPF shop.	a. Maintaining emissions of particulate matter from a control device at or below 0.01 gr/dscf at an existing BOPF shop or 0.004 gr/dscf for a new BOPF shop; and b. Conducting subsequent performance tests at the frequencies specified in § 63.7821.
12. Each existing BOPF shop	a. Maintaining the opacity of secondary emissions that exit any opening in the BOPF shop or other building housing the BOPF shop or shop operation at or below 20 percent (3-minute average); and b. Conducting subsequent performance tests at the frequencies specified in § 63.7821.
13. Each new BOPF shop	a. Maintaining the opacity (for any set of 6-minute averages) of secondary emissions that exit any opening in the BOPF shop or other building housing a bottom-blown BOPF or shop operation at or below 10 percent, except that one 6-minute period greater than 10 percent but no more than 20 percent may occur once per steel production cycle; b. Maintaining the opacity (for any set of 3-minute averages) of secondary emissions that exit any opening in the BOPF shop or other building housing a top-blown BOPF or shop operation at or below 10 percent, except that one 3-minute period greater than 10 percent but less than 20 percent may occur once per steel production cycle; and c. Conducting subsequent performance tests at the frequencies specified in § 63.7821.
14. Each BOPF Group at an existing BOPF shop.	a. Maintaining emissions of mercury from the collection of BOPF Group control devices at or below 0.00026 lb/ton steel scrap input to the BOPF; and b. If demonstrating compliance through performance testing, conducting subsequent performance tests at the frequencies specified in § 63.7821; and c. If demonstrating compliance through § 63.7791(c), (d), or (e), maintaining records pursuant to § 63.7842(e).
15. Each BOPF Group at a new BOPF shop.	a. Maintaining emissions of mercury from the collection of BOPF Group control devices at or below 0.000081 lb/ton steel scrap input to the BOPF; and b. If demonstrating compliance through performance testing, conducting subsequent performance tests at the frequencies specified in § 63.7821; and c. If demonstrating compliance through § 63.7791(c), (d), or (e), maintaining records pursuant to § 63.7842(e).
16. Each planned bleeder valve opening at a new or existing blast furnace.	a. Maintaining the opacity of emissions that exit any bleeder valve as a result of a planned opening at or below 8 percent (6-minute average); and b. Conducting subsequent performance tests at the frequencies specified in § 63.7821.
17. Each slag processing, handling and storage operation for a new or existing blast furnace or BOPF.	a. Maintaining the opacity of emissions that exit any slag processing, handling, or storage operation at or below 10 percent (6-minute average); and b. Conducting subsequent performance tests at the frequencies specified in § 63.7821.
18. Each existing blast furnace stove	a. Maintaining emissions of HCl at or below 0.0012 lb/MMBtu; b. Maintaining emissions of THC at or below 0.12 lb/MMBtu; and c. Conducting subsequent performance tests at the frequencies specified in § 63.7821.
19. Each new blast furnace stove	a. Maintaining emissions of HCl at or below 4.2e–4 lb/MMBtu; b. Maintaining emissions of THC at or below 0.0054 lb/MMBtu; and c. Conducting subsequent performance tests at the frequencies specified in § 63.7821.

Table 4 to Subpart FFFFF of Part 63—Applicability of General Provisions to Subpart FFFFF

As required in § 63.7850, you must comply with the requirements of the NESHAP General Provisions (subpart A of this part) shown in the following table:

Citation	Subject	Applies to subpart FFFFF	Explanation
§ 63.1	Applicability	Yes.	
§ 63.2	Definitions	Yes.	
§ 63.3	Units and Abbreviations	Yes.	

Citation	Subject	Applies to subpart FFFFF	Explanation
§ 63.4	Prohibited Activities	Yes.	
§ 63.5	Construction/Reconstruction	Yes.	
§ 63.6(a), (b), (c), (d), (e)(1)(iii), (f)(2)–(3), (g), (h)(2)(ii)–(h)(9).	Compliance with Standards and Maintenance Requirements.	Yes.	
§ 63.6(e)(1)(i)	General Duty to Minimize Emissions	No, for new or reconstructed sources which commenced construction or reconstruction after August 16, 2019. For all other affected sources, Yes on or before January 11, 2021, and No thereafter.	See § 63.7810(d) for general duty requirement.
§ 63.6(e)(1)(ii)	Requirement to Correct Malfunctions ASAP.	No, for new or reconstructed sources which commenced construction or reconstruction after August 16, 2019. For all other affected sources, Yes, on or before January 11, 2021, and No thereafter.	
§ 63.6(e)(3)	SSM Plan Requirements	No, for new or reconstructed sources which commenced construction or reconstruction after August 16, 2019. For all other affected sources, Yes on or before January 11, 2021, and No thereafter.	See § 63.7810(c).
§ 63.6(f)(1)	Compliance except during SSM	No	See § 63.7810(a).
§ 63.6(h)(1)	Compliance except during SSM	No	See § 63.7810(a).
§ 63.6(h)(2)(i)	Determining Compliance with Opacity and VE Standards.	No	Subpart FFFFF specifies methods and procedures for determining compliance with opacity emission and operating limits.
§ 63.6(i)	Extension of Compliance with Emission Standards.	Yes.	
§ 63.6(j)	Exemption from Compliance with Emission Standards.	Yes.	
§ 63.7(a)(1)–(2)	Applicability and Performance Test Dates.	No	Subpart FFFFF and specifies performance test applicability and dates.
§ 63.7(a)(3), (b)–(d), (e)(2)–(4), (f)–(h)	Performance Testing Requirements	Yes.	
§ 63.7(e)(1)	Performance Testing	No, for new or reconstructed sources which commenced construction or reconstruction after August 16, 2019. For all other affected sources, Yes on or before January 11, 2021, and No thereafter.	See §§ 63.7822(a), 63.7823(a), and 63.7825(a).
§ 63.8(a)(1)–(3), (b), (c)(1)(ii), (c)(2)–(3), (c)(4)(i)–(ii), (c)(5)–(6), (c)(7)–(8), (d)(1)–(2), (e), (f)(1)–(5), (g)(1)–(4).	Monitoring Requirements	Yes	CMS requirements in § 63.8(c)(4)(i)–(ii), (c)(5)–(6), (d)(1)–(2), and (e) apply only to COMS.
§ 63.8(a)(4)	Additional Monitoring Requirements for Control Devices in § 63.11.	No	Subpart FFFFF does not require flares.
§ 63.8(c)(1)(i)	General Duty to Minimize Emissions and CMS Operation.	No, for new or reconstructed sources which commenced construction or reconstruction after August 16, 2019. For all other affected sources, Yes on or before January 11, 2021, and No thereafter.	
§ 63.8(c)(1)(iii)	Requirement to Develop SSM Plan for CMS.	No, for new or reconstructed sources which commenced construction or reconstruction after August 16, 2019. For all other affected sources, Yes on or before January 11, 2021, and No thereafter.	
§ 63.8(c)(4)	Continuous Monitoring System Requirements.	No	Subpart FFFFF specifies requirements for operation of CMS.
§ 63.8(d)(3)	Written procedures for CMS	No, for new or reconstructed sources which commenced construction or reconstruction after August 16, 2019. For all other affected sources, Yes on or before January 11, 2021, and No thereafter.	See § 63.7842(b)(3).
§ 63.8(f)(6)	RATA Alternative	No.	
§ 63.8(g)(5)	Data Reduction	No	Subpart FFFFF specifies data reduction requirements.
§ 63.9	Notification Requirements	Yes	Additional notifications for CMS in § 63.9(g) apply only to COMS.
§ 63.10(a), (b)(1), (b)(2)(x), (b)(2)(xiv), (b)(3), (c)(1)–(6), (c)(9)–(14), (d)(1)–(4), (e)(1)–(2), (e)(4), (f).	Recordkeeping and Reporting Requirements.	Yes	Additional records for CMS in § 63.10(c)(1)–(6), (9)–(14), and reports in § 63.10(d)(1)–(2) apply only to COMS.
§ 63.10(b)(2)(i)	Recordkeeping of Occurrence and Duration of Startups and Shutdowns.	No, for new or reconstructed sources which commenced construction or reconstruction after August 16, 2019. For all other affected sources, Yes on or before January 11, 2021, and No thereafter.	

Citation	Subject	Applies to subpart FFFFF	Explanation
§ 63.10(b)(2)(ii)	Recordkeeping of Failures to Meet a Standard.	No, for new or reconstructed sources which commenced construction or reconstruction after August 16, 2019. For all other affected sources, Yes on or before January 11, 2021, and No thereafter.	See § 63.7842(a)(2)–(4) for record-keeping of (1) date, time, and duration of failure to meet the standard; (2) listing of affected source or equipment, and an estimate of the quantity of each regulated pollutant emitted over the standard; and (3) actions to minimize emissions and correct the failure.
§ 63.10(b)(2)(iii)	Maintenance Records	Yes.	
§ 63.10(b)(2)(iv)	Actions Taken to Minimize Emissions During SSM.	No, for new or reconstructed sources which commenced construction or reconstruction after August 16, 2019. For all other affected sources, Yes on or before January 11, 2021, and No thereafter.	See § 63.7842(a)(4) for records of actions taken to minimize emissions.
§ 63.10(b)(2)(v)	Actions Taken to Minimize Emissions During SSM.	No, for new or reconstructed sources which commenced construction or reconstruction after August 16, 2019. For all other affected sources, Yes on or before January 11, 2021, and No thereafter.	See § 63.7842(a)(4) for records of actions taken to minimize emissions.
§ 63.10(b)(2)(vi)	Recordkeeping for CMS Malfunctions	Yes.	
§ 63.10(b)(2)(vii)–(ix)	Other CMS Requirements	Yes.	
§ 63.10(b)(2)(xiii)	CMS Records for RATA Alternative	No.	
§ 63.10(c)(7)–(8)	Records of Excess Emissions and Parameter Monitoring Exceedances for CMS.	No	Subpart FFFFF specifies record requirements; see § 63.7842.
§ 63.10(c)(15)	Use of SSM Plan	No, for new or reconstructed sources which commenced construction or reconstruction after August 16, 2019. For all other affected sources, Yes on or before January 11, 2021, and No thereafter.	
§ 63.10(d)(5)(i)	Periodic SSM Reports	No, for new or reconstructed sources which commenced construction or reconstruction after August 16, 2019. For all other affected sources, Yes on or before January 11, 2021, and No thereafter.	See § 63.7841(b)(4) for malfunction reporting requirements.
§ 63.10(d)(5)(ii)	Immediate SSM Reports	No, for new or reconstructed sources which commenced construction or reconstruction after August 16, 2019. For all other affected sources, Yes on or before January 11, 2021, and No thereafter.	
§ 63.10(e)(3)	Excess Emission Reports	No	Subpart FFFFF specifies reporting requirements; see § 63.7841.
§ 63.11	Control Device Requirements	No	Subpart FFFFF does not require flares.
§ 63.12	State Authority and Delegations	Yes.	
§ 63.13–§ 63.16	Addresses, Incorporations by Reference, Availability of Information and Confidentiality, Performance Track Provisions.	Yes.	

■ 20. Add tables 5 and 6 to subpart FFFFF to read as follows:

Table 5 to Subpart FFFFF of Part 63—Toxic Equivalency Factors

As stated in § 63.7825(u), you must demonstrate compliance with each dioxin/furan emission limit that applies to you by calculating the sum of the 2,3,7,8-TCDD TEQs using the 2005 World Health Organization (WHO) toxicity equivalence factors (TEF) presented in the following table:

For each dioxin/furan congener . . .	You must calculate its 2,3,7,8-TCDD TEQ using the following TEF . . .
2,3,7,8-tetrachlorodibenzo-p-dioxin	1
1,2,3,7,8-pentachlorodibenzo-p-dioxin	1
1,2,3,4,7,8-hexachlorodibenzo-p-dioxin	0.1
1,2,3,7,8,9-hexachlorodibenzo-p-dioxin	0.1
1,2,3,6,7,8-hexachlorodibenzo-p-dioxin	0.1
1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin	0.01
Octachlorodibenzo-p-dioxin	0.0003
2,3,7,8-tetrachlorodibenzofuran	0.1
1,2,3,7,8-pentachlorodibenzofuran	0.03
2,3,4,7,8-pentachlorodibenzofuran	0.3
1,2,3,4,7,8-hexachlorodibenzofuran	0.1
1,2,3,6,7,8-hexachlorodibenzofuran	0.1

For each dioxin/furan congener . . .	You must calculate its 2,3,7,8-TCDD TEQ using the following TEF . . .
1,2,3,7,8,9-hexachlorodibenzofuran	0.1
2,3,4,6,7,8-hexachlorodibenzofuran	0.1
1,2,3,4,6,7,8-heptachlorodibenzofuran	0.01
1,2,3,4,7,8,9-heptachlorodibenzofuran	0.01
Octachlorodibenzofuran	0.0003

Table 6 to Subpart FFFFF of Part 63—List of Polycyclic Aromatic Hydrocarbons

As stated in § 63.7825(x), you must demonstrate compliance with each polycyclic aromatic hydrocarbon emission limit that applies to you by calculating the sum of the emissions of each polycyclic aromatic hydrocarbon in the following table:

Pollutant name	CAS No.
Acenaphthene	83–32–9
Acenaphthylene	208–96–8
Anthracene	120–12–7
Benz[a]anthracene	56–55–3
Benzo[a]pyrene	50–32–8
Benzo[b]fluoranthene	205–99–2
Benzo[g,h,i]perylene	191–24–2
Benzo[k]fluoranthene	207–08–9
Chrysene	218–01–9
Dibenz[a,h]anthracene	53–70–3
Fluoranthene	206–44–0
Fluorene	86–73–7
Indeno (1,2,3-cd) pyrene	193–39–5
Naphthalene	91–20–3
Phenanthrene	85–01–8
Perylene	198–55–0
Pyrene	129–00–0

[FR Doc. 2024–05850 Filed 4–2–24; 8:45 am]

BILLING CODE 6560–50–P

Exhibit B

Declaration of Alexis Piscitelli

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

UNITED STATES STEEL CORPORATION, Petitioner, v. UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, and MICHAEL S. REGAN, Administrator, United States Environmental Protection Agency, Respondents.	)	No. 24-1171; consolidated with 24-1170 (lead) and 24-1177

<u>DECLARATION OF ALEXIS PISCITELLI</u>

I, Alexis Piscitelli, am over 18 years of age and make the following declaration pursuant to 28 U.S.C. § 1746:

1. I am the Senior Director Environmental for North American Flat Roll. at United States Steel Corporation ("U. S. Steel"), where I am responsible for ensuring compliance and reporting requirements are met in accordance with federal, state and local environmental permits and regulations. I have been employed by U. S. Steel for 27 years and have advanced through various positions.

2. I am providing this declaration on behalf of U. S. Steel's motion for stay of the United States Environmental Protection Agency's ("EPA's") National

Emission Standards for Hazardous Air Pollutants: Integrated Iron and Steel Manufacturing Facilities Technology Review, 89 Fed. Reg. 23,294 (April 3, 2024) ("Rule").

3. As further explained in this declaration, the Rule requires immediate actions by U. S. Steel that threaten safe operation; impose actions that are either impossible, impractical, or are ineffective, but require U. S. Steel to spend hundreds of millions of dollars on implementation; and impose deadlines that cannot reasonably be met.

4. This declaration is based on my personal knowledge of facts and information pertaining to U. S. Steel's business and the implications of the Rule. My knowledge is based on my history with U. S. Steel and analysis U. S. Steel has conducted of the Rule.

I. <u>The Rule Imposes Unsafe Operating Conditions.</u>

5. The Rule places a limit on the number of unplanned bleeder valve openings at new and existing blast furnaces. This is unprecedented and unsafe.

6. Bleeder valves are necessary safety devices. They are designed to open when there is too much pressure in the blast furnace for safe operation. If they fail to open, the result can be a catastrophic explosion that is a threat to the safety of employees and the general public.

7. Placing a numeric limit on unplanned bleeder valve openings improperly pits safety against environmental compliance.

8. The Rule assumes that pressure within the blast furnace can be controlled by monitoring and material management to limit the number of unplanned bleeder valve openings in a year. This is incorrect. Unplanned bleeder valve opening are, as the name implies, unplanned. U. S. Steel already performs extensive monitoring and material management to ensure the safe and consistent operation of its blast furnaces, but sudden and unexpected pressure changes happen in a blast furnace for a number of reasons beyond the operator's control. For example, hot air blown into the furnace can find a new path allowing larger volumes of gas to channel to the top of the furnace quickly increasing top pressure faster than the gas system can react. When this occurs, the bleeder valves need to be able to operate as designed. This occurs with little to no stockline notification.

9. Unplanned bleeder valve openings are not frequent events, but they are also not preventable and they can occur in clusters. The frequency of bleeder openings arises from a number of factors as varies from furnace to furnace. The Rule recognizes that unplanned bleeder openings are more frequent on smaller furnaces, but it does not adequately accommodate this difference and it is only one factor that affects the frequency of bleeder openings. A blast

furnace can, despite good management and monitoring, exceed the limits in the Rule of 4 per year for large blast furnaces and 15 per year for small blast furnaces. If this occurs, the Rule currently prohibits further opening of the bleeder valves, even if this is necessary to protect employee and public safety. This is particularly concerning considering that EPA has determined that the integrated iron and steel industry emissions present acceptable risks with an ample margin of safety. Furthermore, placing a "limit" on the number of "allowable" unplanned bleeder occurrences itself is not a "work practice" as EPA asserts. While U. S. Steel acknowledges that certain work practices can minimize the risk of unplanned bleeder occurrences, none of these practices absolutely prevent such occurrences nor can they be used to limit their frequency to any specified number. In short, if a blast furnace incurs the yearly limit of unplanned bleeders, the only way to be certain that the limit will not be exceeded would be to shut the furnace down.

10. This is a critical flaw in the Rule. The numeric cap on unplanned bleeder valve openings should be removed.

II. <u>The Rule Imposes Impossible Requirements.</u>

11. The Rule imposes requirements that in my experience are not possible to implement.

12. For example, the Rule requires "instantaneous visible emission readings" of the interbell relief valve. *See* 40 CFR §§ 63.7821 and 63.7823. There is no method identified in the Rule for conducting instantaneous visible emission readings. While EPA has a method (Method 203C) for instantaneous opacity readings, this requires 12 visible emission readings in one minute (one every 5 seconds) based on the subjectivity and lack of precision of readings and it is not referenced as an intended Method in the Rule. The only methods referenced in the Rule are Method 9 and Method 22, neither of which is an instantaneous opacity reading.

13. The Rule also requires that blast furnace casthouses make Method 9 observations "at each opening" during performance tests. 40 CFR § 63.7823. Method 9 observations require a number of conditions, including a safe place to observe the opening and proper orientation to ensure a valid reading and avoid interference. These conditions cannot always be satisfied at the same time for all openings at a casthouse. Additionally, Method 9 does not allow for reading overlapping plumes. By treating each opening separately, the Rule does not allow for a valid Method 9 position. By nature of the design, it would be impossible to read perpendicular to the opening and not have overlapping plumes from the casthouse.

14. The Rule also not only assumes that it is possible to set a "metal throughput limit…that has been proved and documented to produce no opacity from the small bell," it requires the Facility to do so. 40 CFR § 63.7793. Emissions from the small bell are not strictly correlated with metal throughput. New bells with low throughput can on occasion have visible emissions. Other bells can operate for an extended period of time and metal throughput without visible emissions. Based on my experience, there is no rational basis to impose a metal throughput limit on a small bell based on observed opacity. As a result, I am not aware of any way to prove that any particular metal throughput will produce no opacity from the small bell of a blast furnace.

15. The Rule requires modifying the O&M Plan if any opacity is observed from the small bell. The Rule fails to recognize situations in which some opacity could be observed, but the small bell repair or replacement is not necessary or appropriate. For example, material build up along the wall or bell edge is a temporary condition which will resolve naturally without bell repair or replacement. For these reasons, there is no metal throughput limit that U. S. Steel can specify with certainty that has been proven and documented to produce no opacity from the small bell on its double-bell furnaces. The Rule requiring new "metal throughput limits" every time any opacity is

observed is a constant ratcheting down on limits with no regard for future performance; effectively the Rule requires extremely costly Blast Furnace design changes.

16. Additionally Blast Furnaces are dynamic processes with many activities occurring simultaneously. Conducting Method 9 observations and distinguishing the small bell seal from other activities such as material charging is extremely challenging if not impossible.

17. The Rule also requires facilities to conduct opacity observations for "slag dumping" to the BF pit. 40 CFR § 63.7823. Slag dumping is not defined in the Rule and is ambiguous. Slag is skimmed to a runner and cast to a slag pit. It is unclear in the Rule where EPA is requiring Method 9. Due to this uncertainty, I cannot determine if a valid Method 9 can be conducted. There are significant safety concerns around slag pits. Because of the nature of slag pits and the criteria of Method 9, identifying a location to regularly conduct valid Method 9 readings safely may not be possible.

18. The Rule's fenceline monitoring requirements raise particular concerns because there is no approved method performing the monitoring required by the Rule. While the Rule delays compliance with the fenceline monitoring requirements until one year after a method is approved and incorporated into the Rule, it is impossible for U. S. Steel to evaluate that practical

implementation of EPA's fenceline monitoring program until a method has been developed.

19. Particularly concerning, the Rule establishes an action level which triggers significant time intensive and potentially costly root cause analyses and corrective actions, including installing additional equipment all before the method has been developed.

20. Because EPA has not promulgated the fenceline methodology to be used to comply with the Rule, the action level based upon prior monitoring is not necessarily appropriate. The monitoring methodology inherently affects the results, making any conclusions based on past data generated with other monitoring methods suspect and unreliable. Different methods frequently have different interferences and factors unique to that method. The fenceline monitoring requirements, including the action levels, root cause analyses and corrective actions, must be stayed until an approved methodology is in place and action levels are established using that monitoring methodology.

21. The Rule also requires that BOP Shops make Method 9 observations "at each opening" during performance tests. 40 CFR § 63.7823. Method 9 observations require a number of conditions, including a safe place to observe the opening and proper orientation (e.g., line of sight pathlength, distance and relative elevation to source, sun angle, etc.) to ensure a valid

reading and avoid interference. These conditions cannot always be satisfied at the same time for all openings at a casthouse. Additionally, Method 9 does not allow for reading overlapping plumes. By treating each opening separately, the Rule does not allow for a valid Method 9 position. By nature of the design, it would be impossible to read perpendicular to the opening and not have overlapping plumes from BOP Shops.

III. <u>The Rule Imposes Impractical Requirements.</u>

22. Many of the requirements in the Rule are either impossible or impractical to implement.

23. For example, the Rule requires that small bells be repaired or replaced before they reach a specified metal throughput limit. 40 CFR § 63.7793. As stated above, metal throughput is not strictly correlated with how well the bell seals; and bells with very little metal throughput may have emissions although no corrective actions are necessary. As a result, the Rule will require needless action on bells that are performing well. Doing so is not only a waste of resources, it is possible that interfering with a properly operating bell because it has reached a predetermined metal throughput limit without regard to actual performance could result in increased emissions, since, as stated above a new or reconditioned bell can have visible emissions as well.

24. Also as discussed above, the Rule incorrectly assumes that unplanned bleeder valve openings can be controlled through monitoring and material management techniques, such as screening of raw materials. Even if EPA removed the numeric limit on unplanned bleeder openings, which it should, the material management requirements in the Rule are also impractical to implement, nor are all of the material management requirements appropriate for all furnaces. Raw materials are screened in a variety of ways that are specific to the material and site at which they are being used. Some raw materials are screened prior to arrival with no option to screen on site. Some materials are screened prior to storage. Some materials cannot be screened because of weather or operational issues. Materials screened to different sizes are charged at appropriate volumes and distribution levels. For example pellet chips might be used along a wall to prevent channeling under certain furnace conditions.

25. The Rule requires Method 9 reading of all planned bleeder openings as soon as the event begins or sunrise whichever is later and ending either when the bleeder valve closes, sunset, or after the first 6-minute block average where all readings are zero percent. A planned bleeder happens every time a furnace goes off-blast. Certainly, this happens during planned outages, but it also happens with little to no notice. An operational problem could occur

which requires the furnace to go off-line for an hour or several hours. For example an issue at a downstream unit could require a furnace to go off-blast to control production. The Rule requiring readings of all planned bleeder openings is impractical, and would require facilities to employee Method 9 readers during all daylight hours should a furnace need to go off-blast. This is a significant cost to the facility and a drain on resources for little to no benefit to the environment.

26. Furthermore should more than one furnace need to go off-blast at the same or overlapping times, additional Method 9 readers would be required to be on site. Waiting for qualified personnel to get on site and into position before taking the Blast Furnace off-blast could lead to significant problems, including increased emissions.

27. There are additional concerns with compliance by April 2, 2026 with the increase in staff needed to be able to have readers on-site during all daylight hours. I have contacted service providers who have indicated they would need to hire and train significantly more employees to be able to provide the services required by the Rule.

28. Also as discussed above, the Rule imposes fenceline monitoring requirements for chromium without a current methodology for monitoring chromium. While this prevents a full evaluation of the monitoring

requirements in the Rule, even if a future method is developed for monitoring fenceline chromium concentrations, a fundamental problem with the fenceline monitoring provisions is that they assume a correlation between fugitive emissions and fenceline chromium concentrations. EPA has not shown any correlation; and to my knowledge, no such correlation exists. As a result, the Rule's requirements that facilities take corrective action to address fenceline concentrations of chromium pose a number of practical problems regardless of the method chosen to monitor fenceline concentrations.

29. Further, the numeric HAP limits in the Rule were calculated based on very limited and insufficient data that does not reflect the variability in emissions from even the best-performing sources in the industry. But the emission limitations apply continuously, requiring facilities to meet them under all operating conditions. The result is emission limits that are impractical if not impossible to comply with and that will require considerable additional research and cost to address beyond what EPA predicts in the Rule.

30. Furthermore, for some new HAP limits, no technology has been demonstrated to meet the limits at integrated iron and steel facilities and the industry will be forced to conduct trials and develop the technology, which is inconsistent with the requirements of Section 112 of the Clean Air Act and

how U. S. Steel has previously complied with new MACT limits. Based on the available data, it is likely that additional pollution controls will be needed to achieve several of the HAP limits, including limits for hydrogen chloride, dioxins and furans, non-dioxin furan organic HAPs, mercury, polycyclic aromatic hydrocarbons, and carbonyl sulfide from various sources. I am not aware of any controls currently in use in the industry that have been demonstrated to achieve these limits and recent evaluation by Barr Engineering has identified none. For several of the standards for dioxins and furans, hydrogen chloride, hydrogen fluoride, and non-dioxin furan hydrocarbons, source emissions are already at or below the concentrations that control device vendors have been willing to guarantee performance, making further reductions highly uncertain.

31. While EPA has proposed that activated carbon injection is an available control for achieving the emission limits for dioxins and furans and polycyclic aromatic hydrocarbons at one source (sinter plants), this is speculative and raises significant technical feasibility concerns. Activated carbon injection has not been demonstrated to be effective at sinter plants, where other injectants may also be needed and the interactions with activated carbon are unknown. Pilot testing in other applications has also shown that activated carbon injection has adverse environmental impacts

through increased pollution loading from carbon slip and increased solid waste disposal.

32. The Rule also requires the use of carbon dioxide shielding or use of full or partial enclosures around beached iron by April 3, 2026. Beaching iron occurs rarely and is not a significant source of emissions at Iron and Steel facilities. The Rule requires facilities to install additional equipment at significant cost with little to no environmental benefit. For example, carbon dioxide shielding installed at an Iron and Steel facility several years ago was upwards of $1.8M and current estimates are closer to $5 million. Engineering and installing equipment today will be significantly more costly. I have little confidence the timeframe of the Rule can be met at locations where equipment installation is required.

IV. **The Rule Will Require U. S. Steel to Incur Immediate and Significant Costs**

33. Given the range of impossible and impractical obligations in the Rule, it is not possible to place exact cost estimates on compliance, but the Rule greatly underestimates both the need to install pollution control technology to comply with the requirements of the Rule and the cost of the monitoring and work practice requirements the Rule imposes.

34. I have reviewed the estimates developed by Barr Engineering, which conclude that the Rule will require approximately $3.2 billion in capital

investment and $749 million in annual costs from the integrated iron and steel industry. Based upon my experience and knowledge, the Barr Engineering estimates seem to be sound and can be reasonably relied upon.

35. Based upon the Barr Engineering estimates, I determined that U. S. Steel's costs for compliance are likely to be in the hundreds of millions. For example, at Sinter/Recyling Plants, HAP limits which go beyond the floor will require the installation of additional control equipment. EPA suggested activated carbon injection will be required. As discussed above, there is considerable uncertainty that installing this technology will ensure industry will be able to continuously meet the limit in the Rule. In particular, utilization of this technology at the Gary sinter plant with its existing controls in place has not been demonstrated. There is also no consideration on other changes required when activated carbon injection in installed. At a minimum there will be additional loading on the baghouse, which may require additional chambers to be installed.

36. Without the Rule, U. S. Steel would not need to incur these costs.

V. <u>The Implementation Schedule for the Rule is Insufficient</u>

37. The Rule imposes compliance obligations as early as June 2024 (for new sources) and as early as April 3, 2025 for existing sources. These include opacity limits for planned bleeder openings, work practices for bell leaks,

and work practices for BOPF Shops. Other obligations arise in 2026, including the numeric limit on unplanned bleeder openings, work practices for unplanned bleeder openings and beaching, and opacity limits for slag processing.

38. Fenceline monitoring requirements are to take effect one year after promulgation of a fenceline monitoring method, which EPA has not yet developed. It is not appropriate to include a deadline for monitoring when the method has yet to be developed. Several issues, including availability of equipment and knowledgeable personnel, analytical constraints, and implementation issues arise with new methodologies. As noted above, the fenceline monitoring requirement, action levels, root cause investigations and corrective action requirements should be stayed until EPA has promulgated an appropriate fenceline monitoring program, data are generated using the promulgated fenceline monitoring program to determine any appropriate action level, and it shown that there are sufficient resources, including equipment and personnel, to implement the fenceline monitoring program.

39. As discussed above, many of these requirements are impossible or impractical. Even if solutions to comply with these requirements can be

developed, however, the 12-24 months provided for identifying, testing, and implementing them is insufficient.

40. Given the lack of clear path forward on many of these requirements, it is not possible to develop a schedule for compliance at this time, but testing alone will require at least 15 months assuming testing companies are available to be able to capture the variety of operating conditions needed to demonstrate an effective solution.

41. Again, this assumes that a solution has been identified. For many requirements, it has not.

42. Concerning the new HAP limits many of the sources have not been tested. If facilities operate existing equipment that cannot meet the limits, additional controls will need to be engineered, purchased, installed and commissioned.

43. For example, the Rule failed to consider HAP emissions from bottom blown steel shops. Bottom blown designs incorporate either natural gas or propane as annular tuyere coolants, which may impact emissions. Further, natural gas and propane combustion for bottom blown BOPFs could likely be a source of THC emissions. There has been no testing of bottom blown BOPFs to date to determine the potential for emissions variability.

VI. The Cumulative Burdens of the Rule and Other Federal Requirements Compound the Harm from the Rule and Could Have a Material Impact on Critical Infrastructure, National Security, and U. S. Steel Operations.

44. The U.S. steel industry is responsible for over $520 billion in economic output, supporting over 2 million jobs. It generates over $56 billion in tax revenues annually.

45. In a study conducted under Section 232 of the Trade Expansion Act of 1962 (19 U.S.C. §1862), the U.S. Department of Commerce determined that domestic steel production is essential for national security; and that domestic steel production depends on a healthy and competitive U.S. industry. (See https://www.bis.doc.gov/index.php/other-areas/office-of- technology-evaluation-ote/section-232-investigations).

46. The Cybersecurity & Infrastructure Security Agency has identified the iron and steel industry as a core critical infrastructure industry impacting transportation systems, electric power grid, water systems, and energy generation systems. (See https://www.cisa.gov/topics/critical-infrastructure-security-and-resilience/critical-infrastructure-sectors/critical-manufacturing-sector).

47. Implementation of the Rule, when at the same time implementing new rules upon all facets of domestic steel manufacturing also potentially jeopardizes thousands of good-paying USW jobs.

48. U. S. Steel is committed to continuing to work with federal partners to develop and implement scientifically sound regulations that effectively and demonstrably benefit the environment.

49. EPA's promulgation of overlapping Clean Air Act regulations without adequate consideration of their interaction undermines these efforts.

50. At the same time that EPA promulgated the Rule, where it is mandating the installation of controls through strict emission limitations, costly monitoring and changes in work practices that will interference with operation and in some cases are unsafe or impossible to implement, EPA has also imposed new MACT standards at taconite iron ore processing facilities and coke plans, requirements to install pollution controls at reheat furnaces and boilers at iron and steel mills, lowered the NAAQS standard for PM2.5, and announced review of other standards. Combined, these actions could have a material impact on the domestic steel industry, significantly affect the schedule for achieving these requirements, and result in a shortage of available technical support for implementation of these rules.

VII. <u>Conclusion</u>

51. In my opinion, the Rule will create unsafe operating conditions at integrated iron and steel mills. The schedule set forth in the Rule is not realistic and underestimates the time needed for compliance by several years. If emission

units cannot achieve compliance by the scheduled deadlines and the deadlines are not stayed or extended, those emission units will be required to curtail operation. As a result, U. S. Steel is already required to incur substantial costs in order to prepare for the upcoming Rule deadlines despite pending petitions for reconsideration and judicial review that may affect the applicability of the Rule and the obligations that it imposes on integrated iron and steel making.

52. A stay of the Rule will mitigate these harms.

I declare, under penalty of perjury, that the foregoing is true and correct. Executed on July 2, 2024.

Alexis Piscitelli
Sr. Director Environmental – NAFR
United States Steel Corporation

Exhibit C

Declaration of Michael Mangahas

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

UNITED STATES STEEL CORPORATION,	)	No. 24-1171; consolidated with 24-1170 (lead) and 24-1177
Petitioner,	)	
v.	)	
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, and MICHAEL S. REGAN, Administrator, United States Environmental Protection Agency,	)	
Respondents.	)	

DECLARATION OF MICHAEL MANGAHAS

I, Michael Mangahas, am over 18 years of age and make the following declaration pursuant to 28 U.S.C. § 1746:

1. I am the Senior Technical Manager for OCS Environmental, Inc. (OCS), where I am responsible for coordinating all aspects of on-site technical and project management services to support the client's need to meet day-to-day environmental regulatory requirements. I have been involved in the field of environmental compliance management since 1988 as a project manager and lead field investigator in a variety of environmental compliance and engineering projects.

2. OCS has been conducting Method 9 observations and Visible Emission Notations (VENs) at United States Steel Corporation's (U. S. Steel's) Gary Works plant in Gary, Indiana since August 2003. I have personally been a contractor working at U. S. Steel facilities since 1991 in the areas of solid and hazardous waste management and air compliance for Environmental Control. I am involved in coordinating all aspects of the Environmental Air Compliance Services Program at U.S. Steel Gary Works, U.S. Steel Midwest Plant and U.S. Steel East Chicago Tin Operations. This includes scheduling all visible emissions monitoring as required by the Gary Works Title V permit; management of all visible emissions observers; determining manpower to provide defined services 365 days per year to ensure uninterrupted services; scheduling compliance stack testing; inspecting and generating of daily reports for continuous monitoring equipment; preparing daily, weekly, monthly, quarterly, semi-annual and annual air reports; and providing additional consultation assistance regarding compliance issues and permitting.

3. I am providing this declaration on behalf of U. S. Steel's motion for stay of the United States Environmental Protection Agency's ("EPA's") National Emission Standards for Hazardous Air Pollutants: Integrated Iron and Steel

Manufacturing Facilities Technology Review, 89 Fed. Reg. 23,294 (April 3, 2024) ("Rule").

4. As further explained in this declaration, the visible emission monitoring requirements in the Rule raise significant technical and logistical concerns. Implementation of the new opacity requirements would be burdensome and, in some cases, technically infeasible. In certain cases, the steps necessary to actually accomplish the observations may render the data collected of a quality inconsistent with the objectives outlined in the Preamble. Further, implementing the requirements may pose safety concerns for the Method 9 observers.

5. To provide specific examples, OCS conducted an evaluation of the visible emission monitoring requirements in the Rule as applied to U. S. Steel's Gary Works plant.

6. This declaration is based on my personal knowledge of facts and information pertaining to visible emission monitoring requirements, U. S. Steel's operations, and the requirements in the Rule. My knowledge is based on my history in the industry, my personal work with U. S. Steel, and analysis OCS has conducted of the Rule and its application to Gary Works.

I. Slag Dumping to Blast Furnace Pit – Blast Furnaces Nos. 4, 6 and 8

7. First, the reference to "slag dumping" in the Rule as it applies slag entering into the Blast Furnace Pit is a misnomer as there is no "dumping" involved in the process. Slag from the blast furnace enters the pit through runners and it is not "dumped." To comply with the Rule and Method 9 criteria, visible emissions observations will need to be conducted from the hi-line track. This observation location is unsafe due to moving rail cars on the track as well as steam-reduced visibility generated when the water sprays are used to cool the slag. Another concern in obtaining valid readings is the background contrast of the slag pit walls when the water sprays are on or off. The slag pit walls do not provide the contrast necessary to observe light emissions and emissions have normally dissipated by the time they reach the top of the slag pit walls.

II. Blast Furnace Pit Digging – Blast Furnaces Nos. 4, 6 and 8

8. Method 9 observations will need to be conducted from the hi-line track to maintain compliance with Method 9 requirements. This observation location is unsafe due to moving rail cars on the track as well as steam-reduced visibility generated when the water sprays are used to cool the slag. Another concern in obtaining valid readings is the background contrast of the slag pit walls when the water sprays are on or off. The slag pit walls do not provide

the contrast necessary to observe light emissions and emissions have normally dissipated by the time they reach the top of the slag pit walls.

III. Slag Dumping to Slag Handling Equipment

9. To allow for maintenance schedules, slag dumping to slag handling equipment (i.e. crushing, screening, etc..) operations have been and continue to be conducted during non-daylight shifts at Gary Works. The requirement to conduct opacity observations during initial and continuous compliance will disrupt daily operations and maintenance activities. Changes to the slag dumping to slag handling equipment operations to accommodate the requirements of the Rule and Method 9 will significantly impact costs and how maintenance is conducted on the equipment.

IV. Large Bell - Blast Furnaces Nos. 4, 6 and 8

10. The Rule doesn't specify the method to be used to conduct "instantaneous interbell relief valve" opacity readings. Method 22 and/or Method 9 observations will require personnel inside the control room to observe the position of the Large Bell when the instantaneous interbell relief valve readings are conducted as well as the Method 9 reader outside. The inside observer must report the bell position to the Method 9 observer. The location of the bell cannot be observed directly by the Method 9 reader outside. Further, there is no direct way to correlate the large bell seal to relief valve

emissions due to the physical construction of the furnace. These conditions compromise the integrity of the data collected and would yield results that are not compliant with Method 9 because the source of any opacity cannot necessarily be identified with specificity and Method 9 requires that no more than one plume be read at a time.

V. Small Bell - Blast Furnaces Nos. 6 and 8

11. Method 22 and/or Method 9 observations will require personnel inside the control room to observe the position of the Small Bell when the 15 minutes of readings are conducted as well as the Method 9 reader outside. The inside observer must report the bell position to the Method 9 observer. The location of the bell cannot be observed directly by the Method 9 reader outside. There is no direct way to distinguish any opacity from the small bell seal from opacity originating from the Blast Furnace top from other sources and activities. This includes material from skip cars charging the blast furnace and/or material buildup when the small bell is open for the material to feed into blast furnace are other sources of emissions not directly related to the small bell seal. Assumptions as to the source of observed emissions would need to be made compromising the integrity of the data collected.

VI. BOPF Openings

12. Conducting Method 9 observations from all openings at No.1 BOP Shop and No. 2 QBOP Shop that includes the BOP furnaces, hot metal transfer, skimming and desulfurization, and other ancillary operations will require personnel inside the shop as well as Method 9 readers outside. The inside observer is necessary to observe the full heat cycle during the observation period and report the activities inside the shop that may be contributing to emissions other than from the full heat cycle to the Method 9 reader outside. In general, emissions during the full heat cycle are captured by the primary gas cleaning system at the No. 1 BOP shop and primary gas cleaning system and secondary emissions baghouse at No. 2 QBOP Shop. Uncaptured fugitive emissions will dissipate and exit through their respective roof monitors. Observing each opening including those at the hot metal transfer, skimming and desulfurization during a full heat cycle is unnecessary because any emissions from these processes are not associated with a full heat cycle also recognizing that any uncaptured emissions from the full heat cycle exit through the roof monitors.

13. Additionally, conducting Method 9 observations from all openings at the No. 1 BOP Shop and No. 2 QBOP Shop presents the following challenges: safe location to observe all of the potential openings, being perpendicular to the

openings, and distinguishing potential overlapping plumes at each opening. EPA is making an assumption that just because there is an opening that there is potential for emissions from that opening. The BOP buildings are very large and process knowledge and airflow inside the buildings can determine if an opening needs to be observed or not. It's unnecessary and wasteful to require multiple observers at all openings.

VII. Costs

14. Implementation will be burdensome since additional personnel will need to be hired and Method 9 certified. In addition to the requirements described above, reading each planned bleeder opening will require certified Method 9 readers to be available on short notice whenever a blast furnace can go off-blast. Initial compliance manhours at Gary Works is estimated at eight-hundred (800) hours at an approximate cost of eighty-five thousand dollars ($85,000). Continuous compliance manhours at Gary Works is estimated at eighteen-thousand (18,000) hours at an approximate cost of one-million six-hundred thousand dollars ($1,600,000) annually.

15. The breakdown of costs used to develop these estimates are provided in the attached spreadsheet.

VIII. Conclusion

16. In my opinion the visible emission monitoring requirements in the Rule are unduly burdensome, and in some cases technically infeasible, inconsistent with the objectives of the Rule, or pose safety concerns. Furthermore, as discussed above, performing the visible emissions monitoring requirements cannot be completed in compliance with Method 9. Revisions to the Rule's requirements will be needed to address these concerns.

I declare, under penalty of perjury, that the foregoing is true and correct.

Executed on July 2, 2024.

Michael Mangahas
Sr. Technical Manager
OCS Environmental, Inc.

Source	Regulation	Rule Language	Comments
Casthouse	63.7823(c)(3)(i)	For the blast furnace casthouse, make observations at each opening: If EPA Method 9 is used, observations should be made separately at each opening.	Assumes 5 openings per BF
BOPF	63.7823(d)(6)(i)	For the BOPF Shop, make observations at each opening: If EPA Method 9 is used, observations should be made separately at each opening.	Assumes 5 openings per Shop
Planned Bleeder	63.7823(f)(1)	To determine compliance with the applicable opacity limit in table 1 to this subpart for planned bleeder valve openings at a blast furnace: Using a certified observer, determine the opacity of emissions according to EPA Method 9 in appendix A–4 to part 60 of this chapter.	
Planned Bleeder	63.7823(f)(2)	Conduct opacity observations in 6-minute block averages starting as soon as event begins or sunrise whichever is later and ending either when the bleeder valve closes, sunset, or after the first 6-minute block average where all readings are zero percent opacity, but in no case shall the opacity observation period be less than 6 minutes.	Assumes VEOs from sunrise to sunset and an average of 12 hours of daylight
Slag	63.7823(g)(1)	To determine compliance with the applicable opacity limit in table 1 to this subpart for slag processing, handling, and storage operations for a blast furnace or BOPF: Using a certified observer, determine the opacity of emissions according to EPA Method 9 in appendix A–4 to part 60 of this chapter.	
Slag	63.7823(g)(2)	To determine compliance with the applicable opacity limit in table 1 to this subpart for slag processing, handling, and storage operations for a blast furnace or BOPF: Conduct opacity observations in 6-minute blocks for 30 minutes at each: slag dumping to BF pit; BOPF slag dumping to pit; BF pit digging, BOPF pit digging; slag dumping to a pile, slag dumping to a piece of slag handling equipment such as crusher.	
Large Bell	63.7823(h)(1)	To determine compliance with the work practice trigger for large bells on a blast furnace: (1) Using a certified observer, determine the opacity of emissions according to EPA Method 9 in appendix A–4 to part 60 of this chapter.	
Large Bell	63.7823(h)(2)	To determine compliance with the work practice trigger for large bells on a blast furnace: (2) Conduct opacity observations of 15 instantaneous interbell relief valve emissions.	Assumes we can find a safe location to observe the emissions coming directly from the relief valve and that the observation will be in sun compliance. Will need to train reader to only observe relieve valve.
Planned Bleeder	Table 2	The opacity of emissions, determined according to the performance test procedures in § 63.7823(f), did not exceed 8 percent (6-minute average).	
Slag	Table 2	The opacity of emissions, determined according to the performance test procedures in § 63.7823(g), did not exceed 10 percent (6-minute average).	

Source	Regulation	Rule Language	Comments
Casthouse	63.7821(h)	For each blast furnace casthouse and BOPF shop, you must conduct subsequent opacity tests two times per month during a cast, or during a full heat cycle, as appropriate.	Assumes 5 openings per BF
BOPF	63.7821(h)	For each blast furnace casthouse and BOPF shop, you must conduct subsequent opacity tests two times per month during a cast, or during a full heat cycle, as appropriate.	Assumes 5 openings per Shop
Planned Bleeder	63.7821(i)	For planned bleeder valve openings on each blast furnace, you must conduct opacity tests according to §63.7823(f) for each planned opening.	Assumes VEOs from sunrise to sunset and an average of 12 hours of daylight
Slag	63.7821(j)	For slag processing, handling, and storage operations for each blast furnace or BOPF, you must conduct subsequent opacity tests once per week for a minimum of 18 minutes for each: 1. BF pit filling; 2. BOPF slag pit filling; 3. BF pit digging; BOPF slag pit digging; and 4. One slag handling (either truck loading or dumping slag to slag piles).	
Large Bell	63.7821(k)	For large bells on each blast furnace, you must conduct visible emissions testing on the interbell relief valve according to EPA Method 22 in appendix A–7 to part 60 of this chapter, unless specified in paragraphs (k)(1) through (3) of this section. Testing must be conducted monthly, for 15 minutes.	
Large Bell	63.7821(k)(1)	If visible emissions are detected for a large bell during the monthly visible emissions testing, you must conduct EPA Method 9 (in appendix A–4 to part 60 of this chapter) opacity tests in place of EPA Method 22 testing on that bell once per month, taking 3-minute averages for 15 minutes, until the large bell seal is repaired or replaced.	Assumes we can find a safe location to observe the emissions coming directly from the large bell and that the observation will be in sun compliance. Will need to train reader to only observe large bell seal.
Large Bell	63.7821(k)(2)	If the average of 3 instantaneous visible emission readings taken while the interbell relief valve is exhausting exceeds 20 percent, you must initiate corrective action within five business days.	
Large Bell	63.7821(k)(3)	Ten business days after the initial opacity exceedance of 20 percent, you must conduct an EPA Method 9 opacity test, taking 3-minute averages for 15 minutes. If the average of 3 instantaneous visible emissions readings from this test exceeds 20 percent, you must repair or replace that bell seal within 4 months.	
Small Bell	63.7821(l)	For small bells on each blast furnace, you must conduct visible emissions testing according to EPA Method 22 in appendix A–7 to part 60 of this chapter. Testing must be conducted monthly for 15 minutes. If visible emissions are observed, you must compare the period between the visible emissions being present and the most recent bell seal repair or replacement. If this time period or throughput is shorter or lower than the period or throughput stated in the O&M plan required by 63.7800, this new shorter period or lower limit shall be placed in the O&M plan as the work practice limit.	Assumes we can find a safe location to observe the emissions coming directly from Nos. 6 and 8 BF small bells and that the observation will be in sun compliance.

Large Bell	63.7833(j)(1)	For large bells on each blast furnace, you must demonstrate continuous compliance by following the requirements specified in paragraphs (j)(1) and (2) of this section if a bell seal exceeds a 20 percent average of 3 instantaneous opacity readings of the interbell relief valve emissions. (1) Initiate corrective action within five business days.	
Large Bell	63.7833(j)(2)	For large bells on each blast furnace, you must demonstrate continuous compliance by following the requirements specified in paragraphs (j)(1) and (2) of this section if a bell seal exceeds a 20 percent average of 3 instantaneous opacity readings of the interbell relief valve emissions. (2) Ten business days after the initial opacity exceedance of 20 percent, if the average of 3 instantaneous visible emissions readings from this test exceeds 20 percent, you must repair or replace that bell seal within 4 months.	Assumes we can find a safe location to observe the emissions coming directly from the large bell and that the observation will be in sun compliance. Will need to train reader to only observe large bell seal.
Planned Bleeder	Table 3	Maintaining the opacity of emissions that exit any bleeder valve as a result of a planned opening at or below 8 percent (6-minute average);	
Unplanned Bleeders	Table 3	Maintaining unplanned bleeder valve openings at or below 4 events per year for large blast furnaces or 15 events per year for small blast furnaces.	
Slag	Table 3	Maintaining the opacity of emissions that exit any slag processing, handling, or storage operation at or below 10 percent (6-minute average);	

	VISIBLE EMISSIONS MONITORING								
	Requirement	Number of Openings	Number of Observation	Hours Required Per Observation	Number of Days	Hours Required Per Day	Hours Required Per Week	Hourly Rate	Cost
63.7823(c)(3)(i)	**No. 4 Blast Furnace**								
	Roof Monitors	1	1	3	1	3	3	77	$ 231.00
	Each Opening (One Cast Cycle)	5	5	3	1	15	15	77	$ 1,155.00
	Coordinator	6	6	3	1	18	18	100	$ 1,800.00
63.7823(c)(3)(i)	**No. 6 Blast Furnace**								
	Roof Monitors	1	1	3	1	3	3	77	$ 231.00
	Each Opening (One Cast Cycle)	5	5	3	1	15	15	77	$ 1,155.00
	Coordinator	6	6	3	1	18	18	100	$ 1,800.00
63.7823(c)(3)(i)	**No. 8 Blast Furnace**								
	Roof Monitors	1	1	3	1	3	3	77	$ 231.00
	Each Opening (One Cast Cycle)	5	5	3	1	15	15	77	$ 1,155.00
	Coordinator	6	6	3	1	18	18	100	$ 1,800.00
63.7823(c)(3)(i)	**No. 14 Blast Furnace**								
	Roof Monitors	1	1	3	1	3	3	77	$ 231.00
	Each Opening (One Cast Cycle)	5	5	3	1	15	15	77	$ 1,155.00
	Coordinator	6	6	3	1	18	18	100	$ 1,800.00
63.7823(d)(6)(i)	**No. 1 BOP**								
	Roof Monitors	1	1	2	1	2	2	77	$ 154.00
	Each Opening (One Heat Cycle)	5	5	2	1	10	10	77	$ 770.00
	Coordinator	6	6	2	1	12	12	100	$ 1,200.00
63.7823(d)(6)(i)	**No. 2 QBOP**								
	Roof Monitors	1	1	2	1	2	2	77	$ 154.00
	Each Opening (One Heat Cycle)	5	5	2	1	10	10	77	$ 770.00
	Coordinator	6	6	2	1	12	12	100	$ 1,200.00
63.7823(f)(1) and (2)	**No. 4 Blast Furnace**								
	Planned Bleeder		1	12	1	12	12	77	$ 924.00
63.7823(f)(1) and (2)	**No. 6 Blast Furnace**								
	Planned Bleeder		1	12	1	12	12	77	$ 924.00
63.7823(f)(1) and (2)	**No. 8 Blast Furnace**								
	Planned Bleeder		1	12	1	12	12	77	$ 924.00
63.7823(f)(1) and (2)	**No. 14 Blast Furnace**								
	Planned Bleeder		1	12	1	12	12	77	$ 924.00

	Requirement	Number of Openings	Number of Observation	Hours Required Per Observation	Number of Days	Hours Required Per Day	Hours Required Per Week	Hourly Rate	Cost
63.7823(g)(2)	**Slag Dumping to BF Pit**								
	No. 4 Blast Furnace		1	2	1	2	2	77	$ 154.00
	No. 6 Blast Furnace		1	2	1	2	2	77	$ 154.00
	No. 8 Blast Furnace		1	2	1	2	2	77	$ 154.00
	No. 14 Blast Furnace		1	2	1	2	2	77	$ 154.00
63.7823(g)(2)	**Slag Dumping to BOPF Pit**								
	No. 1 BOP		1	2	1	2	2	77	$ 154.00
	No. 2 QBOP		1	2	1	2	2	77	$ 154.00
63.7823(g)(2)	**BF Pit Digging**								
	No. 4 Blast Furnace		1	2	1	2	2	77	$ 154.00
	No. 6 Blast Furnace		1	2	1	2	2	77	$ 154.00
	No. 8 Blast Furnace		1	2	1	2	2	77	$ 154.00
	No. 14 Blast Furnace		1	2	1	2	2	77	$ 154.00
63.7823(g)(2)	**BOPF Pit Digging**								
	No. 1 BOP		1	2	1	2	2	77	$ 154.00
	No. 2 QBOP		1	2	1	2	2	77	$ 154.00
63.7823(g)(2)	**Slag Dumping to Pile**								
	Blast Furnaces (TMS)		1	2	1	2	2	77	$ 154.00
	BOP/QBOP (South Shore Slag)		1	2	1	2	2	77	$ 154.00
63.7823(g)(2)	**Slag Dumping to Equipment**								
	Blast Furnaces (TMS)		1	2	1	2	2	77	$ 154.00
	BOP/QBOP (South Shore Slag)		1	2	1	2	2	77	$ 154.00
63.7823(h)(2)	**No. 4 Blast Furnace**								
	Instantaneous Interbell Relief Valve		15	1	1	1	15	77	$ 1,155.00
	Coordinator		15	1	1	1	15	100	$ 1,500.00
	No. 6 Blast Furnace								
	Instantaneous Interbell Relief Valve		15	1	1	1	15	77	$ 1,155.00
	Coordinator		15	1	1	1	15	100	$ 1,500.00
	No. 8 Blast Furnace								
	Instantaneous Interbell Relief Valve		15	1	1	1	15	77	$ 1,155.00
	Coordinator		15	1	1	1	15	100	$ 1,500.00
	No. 14 Blast Furnace								
	Instantaneous Interbell Relief Valve		15	1	1	1	15	77	$ 1,155.00
	Coordinator		15	1	1	1	15	100	$ 1,500.00
	Project Manager						416	125	$ 52,000.00
	Total Above Requirements						**808**		**$ 85,772.00**
						Manhours			

	VISIBLE EMISSIONS MONITORING										
	Requirement	**Number of Openings**	**Number of Observation**	**Hours Required Per Observation**	**Number of Observations per Month**	**Hours Required Per Observation**	**Hours Required Per Month**	**Months**	**Hours per Year**	**Hourly Rate**	**Cost**
63.7821(h)	**No. 4 Blast Furnace**										
	Roof Monitors	1	2	3	2	3	6	12	72	77	$ 5,544.00
	Each Opening (One Cast Cycle)	5	2	3	2	15	30	12	360	77	$ 27,720.00
	Coordinator	6	2	3	2	18	36	12	432	100	$ 43,200.00
63.7821(h)	**No. 6 Blast Furnace**										
	Roof Monitors	1	2	3	2	3	6	12	72	77	$ 5,544.00
	Each Opening (One Cast Cycle)	5	2	3	2	15	30	12	360	77	$ 27,720.00
	Coordinator	6	2	3	2	18	36	12	432	100	$ 43,200.00
63.7821(h)	**No. 8 Blast Furnace**										
	Roof Monitors	1	2	3	2	3	6	12	72	77	$ 5,544.00
	Each Opening (One Cast Cycle)	5	2	3	2	15	30	12	360	77	$ 27,720.00
	Coordinator	6	2	3	2	18	36	12	432	100	$ 43,200.00
63.7821(h)	**No. 14 Blast Furnace**										
	Roof Monitors	1	2	3	2	3	6	12	72	77	$ 5,544.00
	Each Opening (One Cast Cycle)	5	2	3	2	15	30	12	360	77	$ 27,720.00
	Coordinator	6	2	3	2	18	36	12	432	100	$ 43,200.00
63.7821(h)	**No. 1 BOP**										
	Roof Monitors	1	2	3	2	3	6	12	72	77	$ 5,544.00
	Each Opening (One Heat Cycle)	5	2	3	2	15	30	12	360	77	$ 27,720.00
	Coordinator	6	2	3	2	18	36	12	432	100	$ 43,200.00
63.7821(h)	**No. 2 QBOP**										
	Roof Monitors	1	2	3	2	3	6	12	72	77	$ 5,544.00
	Each Opening (One Heat Cycle)	5	2	3	2	15	30	12	360	77	$ 27,720.00
	Coordinator	6	2	3	2	18	36	12	432	100	$ 43,200.00
63.7821(i)	**No. 4 Blast Furnace**										
	Planned Bleeder		1	12	1	12	182	12	2184	77	$ 168,168.00
63.7821(i)	**No. 6 Blast Furnace**										
	Planned Bleeder		1	12	1	12	182	12	2184	77	$ 168,168.00
63.7821(i)	**No. 8 Blast Furnace**										
	Planned Bleeder		1	12	1	12	182	12	2184	77	$ 168,168.00
63.7821(i)	**No. 14 Blast Furnace**										
	Planned Bleeder		1	12	1	12	182	12	2184	77	$ 168,168.00
63.7821(j)	**Slag Dumping to BF Pit**										
	No. 4 Blast Furnace		1	0.5	4.33	0.5	2.17	12	26	77	$ 2,002.00
	No. 6 Blast Furnace		1	0.5	4.33	0.5	2.17	12	26	77	$ 2,002.00
	No. 8 Blast Furnace		1	0.5	4.33	0.5	2.17	12	26	77	$ 2,002.00
	No. 14 Blast Furnace		1	0.5	4.33	0.5	2.17	12	26	77	$ 2,002.00
63.7821(j)	**Slag Dumping to BOPF Pit**										
	No. 1 BOP		1	0.5	4.33	0.5	2.17	12	26	77	$ 2,002.00
	No. 2 QBOP		1	0.5	4.33	0.5	2.17	12	26	77	$ 2,002.00
63.7821(j)	**BF Pit Digging**										
	No. 4 Blast Furnace		1	0.5	4.33	0.5	2.17	12	26	77	$ 2,002.00
	No. 6 Blast Furnace		1	0.5	4.33	0.5	2.17	12	26	77	$ 2,002.00
	No. 8 Blast Furnace		1	0.5	4.33	0.5	2.17	12	26	77	$ 2,002.00
	No. 14 Blast Furnace		1	0.5	4.33	0.5	2.17	12	26	77	$ 2,002.00
63.7821(j)	**BOPF Pit Digging**										
	No. 1 BOP		1	0.5	4.33	0.5	2.17	12	26	77	$ 2,002.00
	No. 2 QBOP		1	0.5	4.33	0.5	2.17	12	26	77	$ 2,002.00
63.7821(j)	**Slag Dumping to Pile**										
	Blast Furnaces (TMS)		1	0.5	4.33	0.5	2.17	12	26	77	$ 2,002.00
	BOP/QBOP (South Shore Slag)		1	0.5	4.33	0.5	2.17	12	26	77	$ 2,002.00
63.7821(j)	**Slag Dumping to Equipment**										
	Blast Furnaces (TMS)		1	0.5	4.33	0.5	2.17	12	26	77	$ 2,002.00
	BOP/QBOP (South Shore Slag)		1	0.5	4.33	0.5	2.17	12	26	77	$ 2,002.00

	Requirement	Number of Openings	Number of Observation	Hours Required Per Observation	Number of Observations per Month	Hours Required Per Observation	Hours Required Per Month	Months	Hours per Year	Hourly Rate	Cost
63.7821(k)(1)	**No. 4 Blast Furnace**										
	Large Bell		1	0.5	1	0.5	0.50	12	6	77	$ 462.00
	Coordinator		1	1	1	1	1.00	12	12	100	$ 1,200.00
	No. 6 Blast Furnace										
	Large Bell		1	0.5	1	0.5	0.50	12	6	77	$ 462.00
	Coordinator		1	1	1	1	1.00	12	12	100	$ 1,200.00
	No. 8 Blast Furnace										
	Large Bell		1	0.5	1	0.5	0.50	12	6	77	$ 462.00
	Coordinator		1	1	1	1	1.00	12	12	100	$ 1,200.00
	No. 14 Blast Furnace										
	Large Bell		1	0.5	1	0.5	0.50	12	6	77	$ 462.00
	Coordinator		1	1	1	1	1.00	12	12	100	$ 1,200.00
63.7821(k)(2)	**No. 4 Blast Furnace**										
	Instantaneous Interbell Relief Valve		1	0.5	1	0.5	0.50	12	6	77	$ 462.00
	Coordinator		1	1	1	1	1.00	12	12	100	$ 1,200.00
	No. 6 Blast Furnace										
	Instantaneous Interbell Relief Valve		1	0.5	1	0.5	0.50	12	6	77	$ 462.00
	Coordinator		1	1	1	1	1.00	12	12	100	$ 1,200.00
	No. 8 Blast Furnace										
	Instantaneous Interbell Relief Valve		1	0.5	1	0.5	0.50	12	6	77	$ 462.00
	Coordinator		1	1	1	1	1.00	12	12	100	$ 1,200.00
	No. 14 Blast Furnace										
	Instantaneous Interbell Relief Valve		1	0.5	1	0.5	0.50	12	6	77	$ 462.00
	Coordinator		1	1	1	1	1.00	12	12	100	$ 1,200.00
63.7821(k)(3)	**No. 4 Blast Furnace**										
	Additional Instantaneous Interbell Relief Valve		1	0.5	1	0.5	0.50	12	6	77	$ 462.00
	Coordinator		1	1	1	1	1.00	12	12	100	$ 1,200.00
	No. 6 Blast Furnace										
	Additional Instantaneous Interbell Relief Valve		1	0.5	1	0.5	0.50	12	6	77	$ 462.00
	Coordinator		1	1	1	1	1.00	12	12	100	$ 1,200.00
	No. 8 Blast Furnace										
	Additional Instantaneous Interbell Relief Valve		1	0.5	1	0.5	0.50	12	6	77	$ 462.00
	Coordinator		1	1	1	1	1.00	12	12	100	$ 1,200.00
	No. 14 Blast Furnace										
	Additional Instantaneous Interbell Relief Valve		1	0.5	1	0.5	0.50	12	6	77	$ 462.00
	Coordinator		1	1	1	1	1.00	12	12	100	$ 1,200.00
63.7821(l)	**No. 6 Blast Furnace**										
	Small Bell		1	0.5	1	0.5	0.50	12	6	77	$ 462.00
	Coordinator		1	1	1	1	1.00	12	12	100	$ 1,200.00
	No. 8 Blast Furnace										
	Small Bell		1	0.5	1	0.5	0.50	12	6	77	$ 462.00
	Coordinator		1	1	1	1	1.00	12	12	100	$ 1,200.00
63.7833(j)(1)	**No. 4 Blast Furnace**										
	Bell Seal		1	0.5	1	0.5	0.50	12	6	77	$ 462.00
	Coordinator		1	1	1	1	1.00	12	12	100	$ 1,200.00
	No. 6 Blast Furnace										
	Bell Seal		1	0.5	1	0.5	0.50	12	6	77	$ 462.00
	Coordinator		1	1	1	1	1.00	12	12	100	$ 1,200.00
	No. 8 Blast Furnace										
	Bell Seal		1	0.5	1	0.5	0.50	12	6	77	$ 462.00
	Coordinator		1	1	1	1	1.00	12	12	100	$ 1,200.00
	No. 14 Blast Furnace										
	Bell Seal		1	0.5	1	0.5	0.50	12	6	77	$ 462.00
	Coordinator		1	1	1	1	1.00	12	12	100	$ 1,200.00
63.7833(j)(2)	**No. 4 Blast Furnace**										
	Bell Seal		1	0.5	1	0.5	0.50	12	6	77	$ 462.00
	Coordinator		1	1	1	1	1.00	12	12	100	$ 1,200.00
	No. 6 Blast Furnace										
	Bell Seal		1	0.5	1	0.5	0.50	12	6	77	$ 462.00
	Coordinator		1	1	1	1	1.00	12	12	100	$ 1,200.00
	No. 8 Blast Furnace										
	Bell Seal		1	0.5	1	0.5	0.50	12	6	77	$ 462.00
	Coordinator		1	1	1	1	1.00	12	12	100	$ 1,200.00
	No. 14 Blast Furnace										
	Bell Seal		1	0.5	1	0.5	0.50	12	6	77	$ 462.00
	Coordinator		1	1	1	1	1.00	12	12	100	$ 1,200.00
	Total Above Requirements						**1,201**	**552**	**14,732**		**$ 1,200,052.00**
	Project Manager						173.333	12	**2080**	125	$ 260,000.00
	Field Supervisor						104	12	**1248**	100	$ 124,800.00
							Total Manhours		18,060	SubTotal	$ 384,800.00
										Total	$ 1,584,852.00

Exhibit D – EPA Correction and Reconsideration Letter (Aug. 14, 2024) (“EPA Letter”)

ASSISTANT ADMINISTRATOR FOR AIR AND RADIATION
WASHINGTON, D.C. 20460

August 14, 2024

Lianne Mantione
Squire Patton Boggs (US) LLP
1000 Key Tower
127 Public Square
Cleveland, Ohio 44114

John D. Lazzaretti
Squire Patton Boggs (US) LLP
1000 Key Tower
127 Public Square
Cleveland, Ohio 44114

Mr. James Pew, Esq.
Earthjustice
1625 Massachusetts Ave., NW
Suite 702
Washington, DC 20036

Dear Ms. Mantione, Mr. Lazzaretti, and Mr. Pew:

This letter concerns the petitions for reconsideration that you submitted to the Environmental Protection Agency (EPA) pursuant to section 307(d)(7)(B) of the Clean Air Act ("Act") on behalf of your clients, Cleveland-Cliffs Inc., United States Steel Corp., and Clean Air Council, et al. The petitions seek reconsideration by the EPA of numerous issues related to the *National Emission Standards for Hazardous Air Pollutants: Integrated Iron and Steel Manufacturing Facilities Technology Review*, 89 Fed. Reg. 23294 (April 3, 2024) ("II&S Final Rule").

The EPA has reviewed your reconsideration petitions and, to date, has not identified any information in those petitions that undermines the validity of the II&S Final Rule. In its discretion, however, the EPA has decided to reconsider certain aspects of the rule to, among other things, consider information submitted outside the comment period. The EPA will reconsider the following three aspects of the II&S Final Rule:

- Work practice standards for unmeasured fugitive and intermittent particulate (UFIP) from unplanned bleeder valve openings;
- Work practice standards for UFIP from beaching; and
  - Maximum Achievable Control Technology (MACT) emission limit for hydrochloric acid (HCl) point-source emissions from blast furnace (BF) casthouses.

We intend to issue a *Federal Register* notice soon to provide an opportunity for public comment on these issues.

Also, in light of certain errors and ambiguities in the II&S Final Rule that were brought to our attention by your reconsideration petitions, we intend to issue a correction notice within the next few months to do the following things:

- Clarifying that the definition of an unplanned bleeder valve opening includes only those openings that are not located downstream from a control device (i.e., "dirty bleeder valve openings");
- Clarifying the timing of planned openings and how they may affect opacity readings;
- Clarifying the definition of a single bleeder valve opening event;
- Deleting from Part 63, subpart FFF, Table 2 the emissions standard for "windbox exhaust stream" for BF casthouses, BF stoves, and basic oxygen process furnace (BOPF) shops because these sources do not have a windbox exhaust stream; and
- Clarifying the method that must be used to measure opacity for bell leaks.

The EPA staff will reach out to you to identify other potential issues that may be appropriate to address in the corrections notice and gather more information on these errors and ambiguities.

Given the large amount of complex data involved in developing the II&S Final Rule, as we prepare to reconsider aspects of the rule and develop the corrections notice, we may identify other issues suitable for reconsideration. This letter is not a denial of any issues raised in your petitions; as noted above, we are continuing to evaluate them. As described in the II&S Final Rule, the EPA also intends to further evaluate fugitive emissions of lead and other metals and opacity data from the BF casthouse and BOPF shop as a separate matter at a later time. 89 Fed. Reg. at 23305 & 23308-09.

If you have any questions regarding the reconsideration process, please contact Steve Fruh of my staff at (919) 541-2837 or fruh.steve@epa.gov. We thank you for your continuing interest in the II&S Final Rule and look forward to hearing from you during the reconsideration process.

Sincerely,

Joseph Goffman
Assistant Administrator

Exhibit E – Unmeasured Fugitive and Intermittent Particulate Emissions and Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFF (Feb. 22, 2024) ("UFIP Memorandum")

MEMORANDUM

DATE: February 22, 2024

FROM: Haley Key, and Gabrielle Raymond, RTI International; Phil Mulrine, Katie Boaggio, and Chuck French, OAQPS/EPA

TO: Integrated Iron and Steel (II&S) Response to Louisiana Environmental Action Network (LEAN) Decision Project File

SUBJECT: Unmeasured Fugitive and Intermittent Particulate Emissions and Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF

1.0 BACKGROUND AND INTRODUCTION

This memorandum describes the final standards and associated costs and emission estimates for seven unmeasured fugitive and intermittent particulate (UFIP) sources in the Integrated Iron and Steel Manufacturing (II&S) industry in the amendments to the National Emission Standards for Hazardous Air Pollutants (NESHAP) (40 CFR, part 63, subpart FFFFF) in response to the 2020 Louisiana Environmental Action Network (LEAN) decision. On April 21, 2020 a decision was issued in LEAN v. EPA, 955 F. 3d. 1088 (D.C. Cir. 2020) in which the Court held that the EPA has an obligation to set standards for unregulated pollutants as part of technology reviews under CAA section 112(d)(6). To comply with the LEAN decision, U.S. Environmental Protection Agency (EPA) examined the known UFIP sources for the II&S industry and is finalizing a combination of opacity limits and work practice standards to control emissions from these sources.

In accordance with section 112 of the Clean Air Act (CAA), on May 20, 2003, the EPA established a NESHAP for the II&S industry (68 FR 27646). Under section 112(f)(2) of the CAA, the EPA is required to perform a residual risk analysis of maximum achievable control technology (MACT) standards within eight years of promulgation. For purposes of the RTR, the EPA sent an information collection request to the II&S industry in 2011 that included a questionnaire and a source test request. The II&S information collection request was sent under the authority of section 114 of the CAA (42 U.S.C. 7414) to acquire the necessary data for the RTR. Copies of the II&S section 114 collection request and responses received by EPA are included in docket for the RTR (Docket ID #EPA-HQ-OAR-2002-0083). The EPA sent out two additional section 114 collection requests in 2022 (one in January 2022 and another in September 2022), including another questionnaire and source test requests to acquire the additional necessary data to comply with the LEAN decision. Copies of the 2022 section 114 collection requests and responses received by the EPA are included in the docket for this action (Docket ID #EPA-HQ-OAR-2002-0083).

As part of the analysis for the II&S RTR in 2019, the EPA identified seven UFIP emission sources of HAP emissions (also called “nonpoint” sources) at II&S facilities. These nonpoint sources were identified primarily from the extensive experience of regional EPA inspectors of II&S facilities in EPA Region V where seven of the eight total II&S facilities in the current industry are located. The nonpoint sources reviewed consist of the following sources: blast furnace (BF) bleeder valve unplanned openings; BF bleeder valve planned openings; BF bell leaks; BF casthouse fugitives; BF iron beaching; BF slag handling and storage operations; and basic oxygen process furnace (BOPF) shop fugitives. Two of these emission sources, BF casthouse fugitives and BOPF shop fugitives, are currently regulated under the NESHAP by opacity limits, as a surrogate for metal HAP. As part of this effort, work practices were identified that could achieve reductions in HAP emissions and associated risks from the seven nonpoint sources. A comment request was published for these work practice standards (Docket item #EPA-HQ-OAR-2002-0083-0030), but no work practice standards were

incorporated to the rule at that time. For this LEAN review, new work practices were identified based on the previous 2019 efforts, the comments received in response to the publication, new data from the 2022 section 114 collection, and public comments on the proposed rule. A description of these nonpoint sources and their estimated HAP emissions; description of the work practices as potential control measures; estimated reductions in emissions with the control measures; and costs and estimated cost-effectiveness of the control measures are discussed below.

2.0 DESCRIPTIONS OF THE UFIP (NONPOINT) EMISSION SOURCES

The seven UFIP emissions sources identified for the II&S industry are listed below and discussed in this section. Note that two of the seven sources (BOPF Shop Fugitives and BF Casthouse Fugitives) were previously regulated by opacity standards in the NESHAP, where opacity is a surrogate for metal HAP.

- BF Unplanned Openings (intermittent, via bleeder valve exhaust)
- BF Planned Openings (intermittent, via bleeder valve exhaust)
- BF Bell Leaks (fugitive)
- BF Casthouse Fugitives (previously regulated fugitive)
- Beaching of Iron from BFs (fugitive)
- BF Slag Handling and Storage (fugitive)
- BOPF Shop Fugitives (previously regulated fugitive)

Appendix A shows photographs of some of the UFIP sources observed at II&S facilities by EPA regional enforcement staff.

The following are definitions of some II&S equipment and processes used in the discussion of the seven UFIP sources below:

- BF is a key II&S process unit where molten iron is produced from raw materials such as iron ore, lime, sinter, and coke.
- BF casthouse is the structure that houses the lower portion of the BF and encloses iron and slag transport operations.
- BOPF is a key II&S process where steel is made from molten iron, scrap steel, and alloys.
- BOPF Shop is the structure that houses the entire BOPF and auxiliary activities, such as hot iron transfer, skimming and desulfurization of the iron.
- Bleeder valve is a device at the top of the BF that, when open, relieves BF internal pressure to the ambient air. The bleeder valve can operate as both a self-actuating safety device to relieve excess pressure and as an operator-initiated instrument for process control.
- Bleeder valve opening means any opening of the BF bleeder valve, which allows gas and/or particulate matter (PM) to flow past the sealing seat. For purposes of this rule, any multiple openings and closings of a bleeder valve that occur within a 30-minute period shall be considered a single bleeder valve opening.
- Planned bleeder valve opening means a bleeder valve opening that is initiated by an operator as part of a furnace startup, shutdown, or temporary idling for maintenance action.
- Unplanned bleeder valve opening means a bleeder valve opening that is not planned.

2.1 BF Bleeder Valves - Unplanned Openings

A BF makes iron and operates under positive pressure. When the furnace is at pressures above standard operation, the pressure is automatically relieved out of bleeder valves that exhaust uncontrolled BF gas to the

atmosphere. Bleeder valves also can be opened manually when operators wish to release internal pressure, such as when the furnace is taken out of service for maintenance (see separate discussion below under planned openings). The exhaust from bleeder valves are released from points located on the BF "uptake" ductwork that rises over 100 feet higher above the top of the BF casthouse, the structure that surrounds the bottom sections of the BF where opacity is measured to fulfill the NESHAP requirements.

The most common cause of unplanned overpressure in a BF is a "slip". A slip is when raw materials loaded in the top of the furnace fail to descend smoothly in the furnace and bind together to form a "bridge" which than "hangs" (i.e., accumulates) in one position in the furnace. When a "hang" eventually falls, or "slips," it creates a pressure surge that opens the bleeder valves, releasing emissions in the form of a large dust cloud. Public comments on the proposed rule indicated that unplanned bleeder valve openings occur more frequently in smaller furnaces than larger ones. A bleeder valve opening can last anywhere between 3 seconds and 10 minutes. These bleeder valve openings can result in significant PM that includes HAP metal emissions, and are the subject of numerous public complaints. Part of the reason for the public concern is the visibility of these releases because even a 3-second openings can cause alarmingly large amounts of visible emissions (see photographs in **Appendix A**).

In a 1976 study (EPA, 1976), the EPA determined that the average number of unavoidable unplanned bleeder valve openings for a BF was about four per month. According to data collected from the 2022 section 114 request, some furnaces are still above the 1976 average. **Table 2-1** below shows the past performance of each of the eight II&S facilities in regard to the average number of unplanned BF bleeder valve openings per month. The range in average monthly unplanned openings per BF was from zero to over seven, with an averaging time period of one year.

Table 2-1. Rates of Unplanned BF Bleeder Valves Openings (from the 2022 Section 114 Collection)

Facility	Furnace ID	Furnace Size	Average Unplanned Openings per Month	Year
CC-BurnsHarbor-IN	C	Large	0	2021
	D	Large	0	2021
CC-Cleveland-OH	C-5	Small	4.5	2021
	C-6	Small	3.8	2021
CC-Dearborn-MI	C	Small	7.1	2021
CC-IndianaHarbor-IN	IH4	Small	0.8	2021
	IH7	Large	0.3	2021
CC-Middletown-OH	No. 3	Small	2.3	2021
USS-Braddock-PA	1	Small	2.8	2021
	3	Small	2.1	2021
USS-Gary-IN	No. 4	Small	0.9	2021
	No. 6	Small	1.3	2021
	No. 8	Small	0	2021
	No. 14	Large	0	2021
USS-GraniteCity-IL	B	Small	0.9	2019

2.2 BF Bleeder Valves - Planned Openings

BF planned openings are similar to BF unplanned openings, but because they are planned, the furnace conditions can be prepared before the bleeder valves are opened and emissions can be minimized. The most common reason to open bleeder valves is for repair of pipes (called “tuyeres”) used for cooling or for injecting oxygen. Some steel companies have policies to immediately shut down the furnaces with water leaks in order to repair the leak; however, this is not universal. Operators also may open the bleeder values prior to other maintenance on the furnace or the stoves. In these procedures, the furnace is turned down to low idle before the relief valves are opened, hence the lower emissions during planned openings.

The planned BF outages occur approximately twice per week and result in opening of bleeder valves for approximately 15 hours each week. The opacity during these open valve periods has been as high as 85 percent in the experience of EPA Region V staff, but also can be 5 percent or lower. The EPA Region V has numerous inspection records of BF operation where little to no opacity was recorded from bleeder valves during planned openings.

2.3 Bell Leaks

BF bells (large and small) are part of raw material hoppers for some BFs. The typical double bell systems are arranged in a type of lock system on top of the BF so that raw materials can be charged into the BF without allowing the solid raw material or furnace gas to escape into the atmosphere. The bells look like inverted cones with flat tops and, hence, appear like bells. The raw material or “charge” is first placed in the small bell’s open hopper. The small bell is on top of the large bell, and the large bell’s hopper is closed during filling of the small bell hopper. After filling the small bell hopper, its top is closed to the atmosphere, then its bottom opens into the top of the large bell. After the charge material is transferred to the large bell, its top is closed and its bottom is opened to allow the charge to enter the furnace. Exhaust air from the furnace is released into the large bell hopper when the top of the furnace is opened to prepare for charging. The exhaust air exits through “uptake” ducts prior to the opening of the small bell.

The large BF bell contacts the top of the furnace via a metal seal so that most of the BF gas and PM emissions evacuated into the uptakes are cleaned of PM by control devices. However, there is typically a narrow gap between the bell seal and the furnace that has been estimated to be about 50 micrometers (µm). A proper seal does not allow visible particulate to escape to the atmosphere. Proper sealing lasts for many weeks if not months before the surfaces wear enough to emit visible particulate. Thus, when the seals have degraded enough to emit visible PM, there is clear indication that the seals are no longer operating as designed and planning for repairs to those seals should commence. In a 1978 EPA study (EPA, 1978), it was estimated that “normally” operating bells release many tons of PM as invisible leaks and that PM emissions increase significantly when the bells wear down and the gaps in the sealing surface start to become so large that opacity is visible from the furnace top. See photos in **Appendix A** of a leaking large bell causing opacity to be released through the gaps in the bell seals.

2.4 BF Casthouse Fugitives

The BF produces iron from raw materials of iron ore, limestone, dolomite, sinter, and coke. The casthouse encloses the area around the base of the furnace that includes multiple processes where PM can be released. The majority of the PM emissions from BFs occur during tapping when molten iron and slag are removed from the furnace and transported from the furnace to points outside the casthouse. PM is emitted at the taphole, from iron and slag troughs, from runners that transport iron and slag, and from the ladle that receives the molten iron. These emissions include flakes of graphite (carbon) called "kish" that is released as the metal cools (because the solubility of carbon in the metal decreases as it cools) and metal oxides that form when the

reduced metal (e.g., iron, manganese) reacts with oxygen in the air. Factors affecting these emissions include the duration of tapping, exposed surface area of metal and slag, length of runners, and the presence/absence of runner covers and flame or fume suppression, which reduce contact of the iron with air.

Most II&S facilities use local capture of PM and other emissions, with subsequent routing to a baghouse located outside the casthouse. These emissions are called primary emissions and considered point sources when emitted from the control device stacks. A few facilities use fume or flame suppression to reduce generation of emissions from the runners that transport the iron and slag outside the casthouse. These emissions are mostly emitted via roof vents at the top of the casthouse and also considered point sources. The current NESHAP has PM-related limits for both controlled emission sources from the BF casthouse, BF control device or opacity for secondary emissions from any opening, that applies to both casthouse vent.

The regulated UFIP fugitives from the BF casthouse result from less than 100 percent capture by the systems in place at various emission points within the buildings. The casthouses at II&S facilities are similar to gigantic barns with multiple openings for emissions to escape to the atmosphere. These openings can be the roof monitor (vent), windows, general exhaust fans, and/or missing wall sheeting. The UFIP emissions from the BF casthouse can be significant and are considered an under-regulated emission source.

2.5 Beaching of Iron from BFs

Beaching of iron occurs when the steelmaking process at the BOPF stops suddenly and cannot receive the molten iron produced in the BF. In this situation, the iron is dumped into an open air sand pit, in a process known as "pooling" or "beaching." The ensuing dust and fumes constitute an environmental hazard and the resultant pool or beached iron takes a long time to solidify before it can be crushed into usable material. Beaching typical occurs near the BF. Fugitive PM emissions result from the impact of the iron on the ground as well as the initial high temperature of the iron, which causes fumes to be emitted from the pile of molten iron until it cools in ambient temperature. Most, if not all, of the emissions are expected to be metal particulate with some gaseous sulfur dioxide emissions.

2.6 BF and BOPF Slag Handling and Storage

Slag is the substance skimmed from the surface of the metal produced in BFs and BOPFs that contains impurities as well as components of the raw materials. Slag is a molten liquid solution of (mostly) silicates and metal oxides with some elemental metal HAP that solidifies upon cooling. The slag leaves the furnaces in open ductwork (called “runners”) and is transported to receiving locations directly outside the buildings. The slag is typically dumped from the runners into front-end loaders that transport the slag to pits located near the BF. Sometimes the slag pit is immediately adjacent to the BFs and the runners empty directly into the slag pit. Emissions from slag is thought to consist of three distinct steps that can generate fugitive PM (and metal HAP) emissions: (1) dumping of slag into pits (note that almost all current II&S facilities report using water spray to cool the hot slag when it leaves the BF to minimize PM fumes and other PM emissions; (2) slag storage in open pits where wind and weather conditions can disturb the slag surface in the open pits and generate fugitive PM emissions (because the slag becomes solid soon after delivery to the slag pit, no fuming PM emissions are expected on a long term basis); and (3) slag removal from the slag pit with front-end loaders to be processed for recycling or removal from the facility.

2.7 BOPF Shop Fugitives

The BOPF is the steel making furnace at II&S facilities. One or more BOPF are housed in a structure called the BOPF Shop. The BOPF Shop includes both iron and steel operations that can generate emissions. The BOPF Shop receives the hot iron metal from the BF that is transported via “torpedo” cars to the BOPF shop

ladle. The reladling generally takes place under a hood to capture these emissions. Desulfurization of the hot iron metal may occur in the BOPF Shop using various reagents such as soda ash, lime, and magnesium. Desulfurization may take place at various locations at an II&S facility; however, if the location is the BOPF shop, then it is most often done at the reladling station to take advantage of the fume collection system at that location. Skimming of slag from the molten iron also removes sulfur from the steelmaking process and is normally done occurs in the ladle, under a hood.

The emissions from steelmaking in the BOPF are from charging of molten iron, metal scrap, and alloys to the furnace; introducing oxygen into the furnace to refine the iron (called oxygen blow), tilting the BOPF vessel to obtain a sample and check temperature, tapping of the molten steel into a ladle, and pouring residual slag into a slag pot. Exhaust PM and gases from the steelmaking furnace itself are captured at the opening to the BOPF and routed to PM control devices. These emissions are called primary emissions and are considered point sources after emission from the control device stacks. Numerous capture systems within the BOPF Shop collect emissions from the iron and steel processes done in open ladles, from material transfer, or charging and tapping. These captured emissions also are routed to PM control devices. These emissions are called secondary emissions and are considered point sources after emission from the control device stacks. The current NESHAP has PM limits for both primary and secondary emissions from the BOPF Shop.

The UFIP fugitives from the BOPF Shop result from less than 100 percent capture by the systems in place at various emission points within the buildings. The BOPF Shops at II&S facilities are similar to gigantic barns with multiple openings for emissions to escape to the atmosphere. These openings can be the roof monitor (vent), windows, general exhaust fans, and/or missing wall sheeting. The UFIP emissions from the BOPF Shop can be significant and are considered an under-regulated emission source.

3.0 EMISSIONS FROM UFIP SOURCES

3.1 Opacity

Opacity data were requested through Method 9 testing for which there was no data available between 2015 and the time the 114 collection request was received. Opacity data were requested for the following sources:

- BF bleeder valve planned openings
- BF casthouse fugitives
- Beaching of iron from BFs
- BOPF shop fugitives
- BF and BOPF shop slag processing, handling, and storage

The opacity data are typically measured at every 15 seconds within a minute for the duration of testing. Tests lasted anywhere from a few minutes to a few hours. From this testing, one-minute averages, six-minute averages,[1] maximum six-minute averages, and average opacity were derived for each unit. A summary of each facility and source's count of tests, maximum six-minute average, maximum 3-minute averages for BOPFs and average opacity are provided in **Appendix B**.

Several of the facilities also submitted "previous" opacity data files per our recent 114 collection, but not all of the previous data was evaluated in this rulemaking due to the large number of previous opacity data files (most of which were PDF files and would take a long time to pull data from). Data was evaluated and reviewed from 37 of the opacity tests for BOPF shops presented in PDF files or Excel spreadsheets at Indiana

[1] Three-minute averages were calculated in place of six-minute averages for BOPF shop fugitives.

Harbor, Gary, Burns Harbor and Dearborn facilities, and 28 of the opacity tests for BF casthouses presented in PDF files or Excel spreadsheets at Indiana Harbor, Gary and Dearborn facilities. A summary of the opacity data and the number of previous opacity data files submitted by 5 facilities are provided in **Appendix B**. The remaining previous opacity data files for BOPF shops and BF casthouses will be further evaluated at a later date and opacity limits for these UFIP sources will be revised in a future rulemaking.

This opacity data was used to determine best performing facilities for each UFIP source, to set opacity limits for UFIP sources, and to calculate estimated emission reductions necessary for each facility to meet these opacity limits.

3.2 Particulate Matter and HAP Emissions

Emissions of PM were estimated for the UFIP sources using PM emission factors developed by EPA from the literature, first principles, discussions with the II&S industry, or a combination of all three. Activity factors of continuous nonpoint sources were based on industry production values. The frequency of emissions for BF planned openings were estimated from responses to the 2022 section 114 collection, and the frequency of other noncontinuous (i.e., intermittent) nonpoint sources were estimated by EPA or the II&S industry. The resulting PM estimated emissions from the seven nonpoint sources in the II&S industry are shown in **Table 3-1.**

The PM emission factors developed in 2019 and discussed in the technical memorandum titled *Development of Emissions Estimates for Fugitive or Intermittent HAP Emission Sources for an Example II&S Facility for Input to the RTR Risk Assessment* (EPA, 2019a) were used in this analysis for each of the UFIP sources except for bell leaks. The emission factor estimate that was provided by EPA Region V in 2019 (0.60 lb/ton iron) was based on a 1975 study (Batelle, 1975) and a 1978 EPA study (EPA, 1978), assuming a leak rate of 12 percent, Japanese BF particle sizes, 50 µm seal gaps, 1975 PM loading, and a flow at the upper end of the estimated range (30 gr/ft^3). The authors of these studies state that their estimates are based on “few available data;” that “some data has not been verified;” that “emission estimates cannot be accepted as accurate;” and that it “needs further research.” The American Iron and Steel Institute (AISI) on EPA’s 1978 task force suggested that the results from these studies were significant overestimates. Industry input on the PM emission factor for bell leaks indicated that bell leaks are rare. Subsequently, another 2019 estimate of 0.050 lb/ton iron was calculated based on this feedback by substituting a 1 percent leak rate in place of EPA Region V’s 12 percent leak rate. For the purpose of this analysis, an average of EPA Region V’s emission factor and the emission factor calculated from industry feedback (0.325 lb/ton iron) was used as the PM emission factor for bell leaks.

Additional emission reduction factors were developed by UFIP source for each facility based on work practices that are already utilized to reduce emissions at each facility. The control efficiency of the work practices are expected to range from 50 to 80 percent based on EPA estimates of the efficiency of work practices in general. Therefore, emission reduction values by work practice were developed so that the minimum achievable emission reduction factor is 0.5 for each UFIP source. Emission reduction values were estimated using engineering judgement at a low confidence level. Facilities reported information about the work practices they currently use in response to the 2022 section 114 collection, which was then used to determine the factors that were applied to each UFIP source at each facility to calculate baseline PM emissions.

Facility-wide emissions for each facility were estimated by multiplying the emission factors by the activity of each source and by the emission reduction factors. **Appendix C** shows the activity, emission reduction factors, and estimated emissions for each facility by UFIP source.

The HAP emitted from the nonpoint sources were metal HAP that included antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, mercury, nickel, and selenium. To estimate metal HAP emissions, a ratio of HAP-to-PM was developed from the point source data from the 2011 II&S section

114 collection data. The PM estimates for each UFIP source were multiplied by the HAP-PM ratio for the appropriate sources (i.e., from the BF for all BF-related UFIP sources and from the BOPF for the BOPF UFIP source. For slag UFIP sources, a combination of literature information and section 114 collection data for the BF were used to develop HAP/PM factors for each HAP emitted from slag UFIP sources. The development of the HAP-PM factors also are described in the technical memorandum for the example facility cited above (EPA, 2019a). The resulting HAP estimated emissions from the seven nonpoint sources in the industry are shown in **Table 3-1** along with the HAP-to-PM ratios used to estimate HAP emissions from PM emissions. Derivation of the HAP-PM factors are described in detail in the memorandum cited above (EPA, 2019a).

Table 3-1. Total Estimated HAP Emissions for Nonpoint Sources in the II&S Industry

Nonpoint Source	PM Emissions (TPY)	HAP/PM Factor	HAP Emission (TPY)
BF Unplanned Openings	79	0.037	2.9
BF Planned Openings	51	0.037	1.9
BF Bell Leaks	2,302	0.037	85
BF Casthouse Fugitives	1,240	0.037	46
BOPF Shop Fugitives	5,434	0.032	174
Beaching	0.9	0.037	0.034
Slag Handling & Storage	1,198	0.034	41
Total	**10,305**		**351**

Note: PM emissions are estimated from emissions factors obtained from the literature and EPA reports. HAP emissions are developed from the estimated PM emissions and the ratio of HAP to PM at the example facility in the 2019 analysis.

4.0 CONTROL MEASURES FOR REDUCING HAP EMISSIONS FROM UFIP SOURCES

This section discusses the control measures that were identified for the seven UFIP sources, described in **Section 2.0** above. The following are definitions of II&S processes used in this discussion:

- Corrective Action means the design, operation and maintenance changes that are taken, consistent with good engineering practice, to reduce or eliminate the likelihood of the recurrence of the primary cause and any other contributing cause(s) of an event identified by a root cause analysis as having resulted in a discharge of pollutants from an affected facility in excess of specified thresholds.

- Root Cause Analysis are actions taken to determine the cause of an exceedance in emissions and to determine appropriate corrective action. The root cause analysis and initial corrective action analysis should be completed and initial corrective actions taken in a timely manner after determining there is an exceedance.

4.1 Control of HAP UFIP Emissions from BF Unplanned Openings

Most BF slips are preventable and many of the practices to avoid slips have no or minimal cost. Documents as old as 1917 (Wilcox, 1917) have prescribed operating practices that reduce or eliminate slips. Slip avoidance actions that have minimal cost include screening raw materials for very small particles (called "fines") and enhancing instrumentation on the furnace to be sufficiently precise in the monitoring of

temperature and pressure so that operators can take early action to avoid a slip. Temperature and pressure changes in the furnace can be used to identify when a hang has started and furnace operation has become abnormal. Setting a limit on the number of BF unplanned openings has reduced unplanned openings in at least one area of the U.S. with II&S facilities. Allegheny County (PA) previously imposed a limit on the number of slips, but after several years the slip limit was removed because slips at II&S facilities in the county had been eliminated through effective management of BF operations spurred by the limit (Allegheny, 1989).

Operator attentiveness to BF conditions is central to avoiding unplanned openings. Standard operating plans (SOPL) with appropriate documentation and recordkeeping can be used to ensure a facility takes certain actions, such as proper damper positions in pollution collection systems and use of better quality raw materials, to minimize slips. See **Appendix E** for an example SOPL to prevent unplanned openings (USOPL). The USOPL would enable facilities to achieve emission reductions in any number of ways to meet a specified number of unplanned openings.

Most companies now have instrumentation, programming and procedures that reduce the likelihood of unplanned openings. The few facilities that do not have preventive procedures and warning devices are outliers in the number of openings experienced by BFs in the II&S industry. Stockline monitoring devices also are used to alert operators when the BF burden stops descending naturally which indicates a slip could be imminent. Many II&S facilities currently have one or two of these devices.

For extra control of unplanned openings, a number of II&S facilities have installed what is termed a “clean” or “semi-clean” gas bleeder valve. These devices are installed after the BF dust collector and Bischoff scrubber (i.e., variable throat scrubber that allows BF top pressure to be adjusted and maintained in response to furnace conditions). If a slip or sudden surge of pressure occurs, the clean gas bleeder valve opens allowing the cleaner BF gas to be vented to the atmosphere first rather than opening the dirtier gas bleeder valves on the BF uptakes. Most existing furnaces have clean gas bleeders and all new furnaces have them. For older furnaces, the clean gas bleeder valve can be retrofit. However, the cost could be considerable to install clean gas valves on older existing furnaces.

4.2 Control of HAP UFIP Emissions from BF Planned Openings

A procedure for establishing the lowest possible internal pressure before opening bleeder valves was developed by EPA Region 5 to ensure visible emissions are minimized to the greatest extent possible. See **Appendix F** for example language for planned opening standard operating plan (PSOPL). Some II&S facilities have used a similar procedure to reduce the pressure before they open the bleeder valves and this practice has significantly reduces emissions. It may be possible for all II&S facilities to perform this evaluation or a similar evaluation at each of their furnaces to minimize emissions during dirty gas bleeder valve planned openings. If opacity levels are already too high, operators should reevaluate the sequence and timing of steps when bringing a BF down for maintenance via a planned bleeder valve opening. Based on EPA enforcement experience, the most critical points in opening dirty gas bleeder valves are when the fuel is stopped, the input air is stopped, and/or when there is high internal BF pressure.

Work practices that can be done by facilities to avoid excess emissions during shut down and before planned openings of dirty gas bleeder valves include the following:

- Tap as much liquid (iron and slag) out of the furnace as possible;
- Remove fuel and/or stop fuel injection into furnace;
- Reduce air/wind to 5 pounds per square inch (psi) bottom pressure; and

- Add steam into system at various places when there is insufficient draft, mostly near the scrubber and dust catcher (PM control)

4.3 Control of HAP UFIP Emissions from BF Bell Leaks

It is estimated that the small and large bell seals are repaired or replaced regularly, with large bells replaced about every 5 years with a number of small bell repairs during this time period. Significant leaks can occur if the seals on both bells are not repaired or replaced in a timely manner, and as needed for high wear situations. Leaking of large bell seals at the furnace/bell seal interface can be visible to an observer. Therefore, one control technique would be to monitor the furnace/bell seal interface for visible emissions (VE) on a regular basis with the plan to replace the bell seals as soon as leaks are visible, or is above some level of opacity (e.g., 10%).

Based on EPA Region V experience with the II&S industry, repair or replacement of the small bell seal periodically based on site-specific conditions would reduce PM and HAP metal emissions from a BF.

4.4 Control of HAP UFIP Emissions from BF Casthouse

The opacity limit in the II&S NESHAP for monitoring fugitive PM and HAP emissions BF casthouse is less than 20 percent during thirty 6-minute tests, as 6-minute averages, from any opening in the casthouse, and between the casthouse and the furnace shell during tapping (once per Title V permit cycle, e.g., 5 years or every 2.5 years without a Title V permit). To better monitor fugitive emissions, opacity could be measured more often during events expected to produce high opacity, such as tapping, where opacity could be monitored 4 taps per week from casthouse roof vents. In order to determine the true emissions, all other openings to the casthouse should be closed. Use of EPA Method Alt-082 (DOCS) rather than EPA Method 9 would ensure accurate emissions are measured and would reduce the amount of facility labor needed to take the measurements.

In addition, preventive measures can be done to reduce generation of emissions that contribute to opacity. These measures include keeping iron and slag runner covers in place at all times except when runner or cover is being repaired or removed for inspection purposes (2-hour repair limit).

To identify all potential opacity sources and measures to reduce fugitive emissions, the facility could develop and operate according to a "BF Casthouse Operating Plan" to minimize fugitive emissions, to include:

- Identification of each opening in casthouse;
- Number of opacity readers needed and method of making observations;
- Locations and status of each runner cover;
- Schedule for inspection of casthouse for openings and leaks above 12 feet high, where all openings are closed (except for roof monitor) during the opacity observations;
- Procedures to ensure all doors and other openings are closed during all transfer operations; and
- Procedures to ensure that runner covers are in place on top of runners at all times except when runner or cover is being repaired or removed for inspection purposes (specify a repair or observation limit, such as 2 hours).

4.5 Control of HAP UFIP Emissions from Beaching of Iron from BFs

Methods of controlling beaching emissions include enclosing the process, using fume suppressants, or granulation. Granulation[2] of the excess hot metal produces a by-product, granulated pig iron, that can readily be used internally; for example, as BOPF coolant, or sold to third parties as feedstock for electric arc furnaces, cupolas and induction furnaces (IIMA, 2019). Granulation is also used for slag processing. Application of granulation has capital and operating costs that can be offset by proceeds from sale of the granulated product. No air emissions result from the use of a granulator.

Enclosures that prevent beached iron fumes from being mixed with the atmosphere are used at many current II&S facilities (AISI, 2017). These enclosures need only three sides to be effective. Due to the heat of the beached iron, having one side open to air allows for a better worker environment. Use of fume suppressants, such as atomized CO_2, can be used alone or in conjunction with enclosures. It is our understanding that emissions can also be reduced by minimizing the height, slope, and speed of beaching.

4.6 Control of HAP UFIP Emissions from BF Slag Handling and Storage

Slag handling has multiple points of potential fugitive emissions during slag handling operations. Measuring opacity during these events will identify points in the process where attention is need and where methods to reduce fugitives are warranted. An opacity limit or action level can be set, such as 5 percent or 10 percent opacity, as 3-minute average, or 6-minute averages. Various methods are available to reduce methods of slag emissions. Because the slag emissions are emitted from an open outdoor area, most methods of control involve purchase of equipment, some more expensive than others. The equipment used to reduce or eliminate slag emissions includes wind screen, foggers, and granulation. These are discussed below.

Dry Fog Water Spray System--Another method is the use of (dry) fog spray systems over the pit area, where the spray is applied after each dump of slag and during all digging activities to extent feasible and safe. Dry fogging is particularly successful at controlling dust where the use of ultrasonic nozzles (and compressed air) produce a plume of very small low-mass droplets. Dry fogging controls droplet size by utilizing a special nozzle design that allows water to pass through high-frequency sound waves produced by a highly accelerated mixture of water and compressed air. The speed of the compressed air and water mixture hitting a small cup in front of the nozzle reflects the energy back into itself and creates a sonic shock wave that produces very small droplets in a cloud dispersion (NIOSH, 2019).

The very small droplets of dry fog nozzles make this system particularly effective at knocking down respirable airborne dust because the water droplets need to be in similar size ranges to the dust particles to be effective. The intent is to have the droplets collide and attach themselves (agglomerate) to the dust particles, causing them to fall from the air. If the droplet diameter is much greater than the diameter of the dust particle, the dust particle simply follows the air stream lines around the droplet. If the water droplet is of a size comparable to that of the dust particle, contact occurs as the dust particle follows the stream lines and collides with the droplet. Therefore, for optimal agglomeration, the particle and water droplet sizes should be roughly equivalent. Water droplets in the range of 2 to 20 µm have been shown to be most effective (NIOSH, 2019).

One dry fogger can control dust in a 20 ft. x 20 ft. slag pit. The dry foggers need water and compressed air, and can be equipped with a freeze protected system. Each fogger has three manifolds, with 10 nozzles per manifold for a total of 30 nozzles. A slag pit would be fogged for at minimum about 1 minute during a slag dump. Assuming there are 15 minutes between dumps, four dumps per hour, that equates to 96 dumps per day and 96 minutes of fogging per day (DSI, 2018).

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[2] In granulation, liquid iron is rapidly quenched in water, and then discharged as solidified and cooled particles. Dewatering is then done before transport to storage.

Slag Granulation--Slag can be sent to a granulator that turns slag into granules that can be used for other purposes. No air emissions result from the use of a granulator. The granulator takes the slag and blasts it with water that turns the slag into granules that have the appearance of beach sand. The slag granules are used to make concrete. Although use of slag granulation has capital and operating costs, these can be offset by proceeds from sale of the granulated product. Two current II&S facilities use granulation for one of their BFs' slag. A separate company typically owns and runs the granulator.

Wind Screens--One method to reduce slag pit fugitive PM is the use of wind screens that block the prevailing wind from disturbing the surface of the slag pit or the surface of the slag as it is dumped or removed from the pit. See photos of wind fencing from one vendor[3] of wind fences in **Appendix G**. Unlike other forms of fugitive dust control, wind fences provide continuous control of dust without the operational and maintenance costs of other methods. Once installed, there are no additional requirements for wind fences. The fence support structures are custom designed to withstand the forces of wind specific for the area located. One vendor, offers wind fabric that is designed to "break away" on the bottom and sides while still remaining attached at the top during an extraordinary wind event. This prevents, in most cases, the fabric from being damaged due to higher than specified wind speeds. The exact wind shear speed that it takes to break the wind fabric loose from the frame is custom tailored to each end users requirements and geographical location and is designed to protect the entire wind fence system from critical support failure. After the weather event has passed the wind fabric can simply be reattached to the support structure and the wind fence can be put back into service. By being designed to release part of the fabric during a high wind event the fabric is better protected from ripping and tearing if wind exceeds its maximum designed operational limits.

4.7 Control of HAP UFIP Emissions from BOPF Shop

The opacity limit in the II&S NESHAP for monitoring fugitive PM and HAP emissions BOPF shop is less than 20 percent during thirty 3-minute tests, as 3-minute averages, from any opening in the BOPF shop, and between the BOPF shop and the furnace shell during tapping (once per Title V permit cycle, e.g., 5 years or every 2.5 years without a Title V permit). To better monitor fugitive emissions, opacity could be measured more often during events expected to produce high opacity, such as tapping, where opacity could be monitored 4 taps per week from BOPF shop roof vents. To help ensure accurate opacity readings from the roof vents, all other openings to the BOPF shop should be closed. Use of EPA Method Alt-082 (DOCS) rather than EPA Method 9 could help ensure accurate opacity readings and would reduce the amount of facility labor needed to take the measurements.

In addition, preventive measures can be done to reduce generation of emissions that contribute to opacity. These measures include keeping iron and slag runner covers in place at all times except when runner or cover is being repaired or removed for inspection purposes (2-hour repair limit). To identify all potential opacity sources and measures to reduce fugitive emissions, the facility could develop and operate according to a "BOPF Shop Operating Plan" to minimize fugitive emissions, to include:

- List all events that generate visible emissions (including slopping) and state the steps the company will take to reduce the incidence rate.
- Minimum hot iron pour/charge rate (minutes).
- Schedule of regular inspections of BOP Shop for openings and leaks above 12 feet high with all openings closed (except for roof monitor).
- Optimize positioning of hot metal ladles with respect to the hood face and furnace mouth.
- Optimize furnace tilt angle during charging.

[3] Dust Control Technologies, Inc. Brush Prairie, WA 98606. sales@dustcontroltech.com

- Prohibit burning material, such as bags, pallets and other material in the shop.
- Keep all openings closed except when in use, especially during transfer operations. (Does not include roof monitors.)
- Monitor opacity from all openings with EPA Method Alt-082 (camera); re-evaluate use of monitor every two years (alternative is Method 9).
- Use higher draft velocities to capture more fugitive emissions at a given distance from the hood.
- Perform a ventilation study to maximize secondary (fugitive) emissions capture by hooding.
- Install additional equipment to minimize fugitive emissions:
    - Add extension (flanges) from primary hood into charging and tapping aisles for better draft and to shorten distance to emission source.
    - Add extension of pouring spout on hot metal charging ladle to move emission point closer to or under hood.
    - Add small openings in furnace doors to allow monitoring of temperature and other parameters to avoid opening doors.
    - Add wall partitions or ducts to direct air into local hoods to prevent escape from building.
    - Add canopy hoods to enhance fugitive collection for local hoods.

4.8 Opacity Issues

4.8.1 Opacity Monitoring

Given the history of numerous opacity violations at II&S facilities at BF casthouses and the BOPF shop roof monitors, the use of a camera to measure opacity, as in EPA Alternative Method 082 (digital opacity camera system (DOCS)), taken from ASTM D7520-13, is an alternate to EPA Reference Method 9 and an improvement in the reliability and accuracy of opacity monitoring. The recently promulgated Ferromanganese RTR rule, published on June 30, 2015 (80 FR 37366), required opacity monitoring to be conducted according to ASTM D7520-13.[4] For II&S facilities, the DOCS also could be used to determine the opacity from bleeder valve openings which are difficult to observe because they are either unplanned or occur during shutdown activities. The DOCS method provides reliable, unbiased opacity readings and is an improvement in the transparency of opacity monitoring results.

4.8.2 Location of Opacity Measurements

It is commonly known to EPA inspectors that II&S facilities only read opacity at BF casthouse roof monitors and ignore emissions from openings on the sides of the casthouse and from the gap between the casthouse and the furnace. To improve the opacity monitoring from casthouses, a facility's standard operating procedures (SOP) can include identification of all openings in the casthouse that could emit opacity, identifying which openings typically have the highest opacity, and specifying which openings to be observed for opacity concurrently as a group of openings. The II&S facility SOP can identify the openings and groups of openings to be measured for opacity on a casthouse drawing; the SOP could then be reviewed and approved by their management and delegated permit authority.

When conducting Method 9 for visible emission observations of a group of openings, the reader must look at the point of highest opacity. Therefore, the EPA Method 9 or visible emission (VE) report for a group of openings might contain a "mixture" of 15-second readings, where each 15-second reading may indicate the

[4] For the Ferroalloys Final RTR rule (80 FR 37366), the EPA required facilities to use the DOCS once per week for one entire furnace cycle (about 90 minutes), for each furnace building. One facility had three buildings; therefore, the rule requires them to use the DOCS about 270 minutes per week for the entire facility. The EPA also stated in the rule that after 26 weeks of compliant weekly opacity readings, facilities can reduce to monthly readings.

instantaneous opacity from a location on the casthouse several feet away from other readings. It is important to note that most often there are many openings in a casthouse and it would be necessary to perform any required readings in series or to use several readers for the different groups being read at the same time. While this may increase costs above the current practice, this practice will ensure opacity is measured from any and all opening in the casthouse.

The alternative method to Method 9, EPA Alt-082 (DOCS), could be used to monitor the opacity from these sources. One of the benefits of EPA Alternative 082 is that many more openings can be viewed at one time, possibly saving the company money in the long term. Also, when a DOCS is used, the images of one observation can be reanalyzed if EPA or delegated authority believes the point of highest opacity was not used in calculating the opacity. The ability to reanalyze opacity readings provides the opportunity for better agreement of observations and the casthouse opacity limit. The DOCS provides a more objective, better substantiated opacity readings compared to Method 9 and would improve transparency of opacity monitoring results.

4.9 Reductions of PM and HAP With Work Practices for II&S Nonpoint Sources

The control efficiency of the work practices are expected to range from 50 to 80 percent based on EPA estimates of the efficiency of work practices in general. In EPA's 2019 estimates of the impacts of UFIP work practices for the II&S industry, an average value of 70 percent efficiency was used for most of the nonpoint sources (except for BOPF shop work practices, which was estimated at a 65 percent efficiency). However, in response to the EPA's request for comment on those work practice standards, some comments were received that indicated these efficiency estimates were likely an overestimation. Therefore, in this analysis, the lower end of the expected control efficiency range as a sum of control efficiency from work practices already in use and control efficiency from work practices that will be implemented to comply with this rule (50 percent) was used as a default value for each source. The submitted public comments can be found in Docket ID #EPA-HQ-OAR-2002-0083. Since some of these emissions reductions are already factored into baseline emission where facilities are already implementing work practices, the emissions reductions that would be experienced as a result of work practices implemented to comply with the rule were calculated to be (Emission Reduction Factor – 0.5)*100 for BF unplanned openings, BF bell leaks, BOPF shop fugitives, BF iron beaching, and BF slag handling and storage at each facility. See **Section 3.2** for more details on the emission reduction factors that were calculated for baseline PM emissions.

More specific control efficiencies were developed for BF planned openings using opacity data that was collected in the 2022 section 114 collection request as well as the 2011 section 114 collection request. For sources that already have a maximum 6-minute opacity average that is below the proposed opacity limit, a control efficiency of zero was applied. For sources with a maximum 6-minute average above the proposed opacity limit, the percent reduction that would be needed to meet the proposed opacity limit was applied as the control efficiency, except where the percent reduction was higher than the default control efficiency value of 50 percent. Sources with a maximum 6-minute opacity average that would need greater than 50 percent reduction to meet the proposed limit were assigned the default control efficiency value of 50 percent. See **Appendix D** for the control efficiency values that were applied for each of these sources.

Table 4-1 shows the estimated HAP emissions for the nonpoint sources before and after implementation of the work practices using estimates of control efficiency described above, with 278 TPY HAP before control, 213 TPY HAP after control, and 64 TPY HAP reduced.

Table 4-1. Estimated HAP Emissions Before and after Control Using Work Practices at Nonpoint Sources for the II&S Industry

Nonpoint Source	Average % Reduction	HAP Emissions (TPY)		
		Before Control	After Control	Reductions
BF Unplanned Openings	23%	2.1	1.6	0.50
BF Planned Openings	27%	1.6	1.2	0.41
BF Bell Leaks	42%	76	45	31
BF Casthouse Fugitives	0%	46	46	0
BOPF Shop Fugitives	20%	123	97	25
BF Iron Beaching	20%	0.022	0.018	0.0035
Slag Handling & Storage	25%	30	22	7.4
Overall Total	**26%**	**278**	**213**	**64**

5.0 COSTS OF CONTROL MEASURES FOR UFIP EMISSIONS FROM NONPOINT SOURCES

The finalized control measures for UFIP sources are discussed below along with the costs and emission impacts, and cost-effectiveness.

5.1 Selected Control Measures for UFIP Sources

The following are the control measures discussed above that are being finalized. Control measures that were not selected were either not well-developed or not expected to be viable for the entire II&S industry. Additionally, opacity data for BF casthouse fugitives and BOPF shop fugitives will be further evaluated at a later date and the current opacity limits for those sources will be revised in a future rulemaking.

5.1.1 Work Practices for BF Unplanned Openings

- Develop and operate according to a "Slip Avoidance Plan" to minimize slips and submit it to EPA for approval;
- Install devices to continuously measure/monitor material levels in the furnace (i.e., stockline), at a minimum of three locations, with alarms to inform operators of static (i.e., not moving) stockline conditions which increase the likelihood of slips;
- Install and use instruments on the furnace to monitor temperature and pressure to help determine when a slip is likely to occur;
- Install a screen to remove fine particulates from raw materials; and
- Limit the number of unplanned openings to 4 per year for each large blast furnace and 15 per year for each small blast furnace.
    - *Large blast furnace* means a blast furnace with a working volume of greater than 2,500 m^3.
    - *Small blast furnace* means a blast furnace with a working volume of less than 2,500 m^3.

5.1.2 Work Practices for BF Planned Openings

- Limit opacity to 8 percent, as 6-minute average. We received opacity data from six of the eight operating facilities for planned openings. We reviewed the maximum six-minute opacity readings for all six facilities. The average of the maximum six-minute opacity values for the best performing five facilities is 7.75 percent (rounded to 8 percent). We did not apply the standard UPL approach because that method has not been used in the past when calculating opacity limits. The current UPL approach was designed around run-by-run data, usually for 3 runs per test, and could not directly be applied to opacity 6-minute averages. We estimate that the "MACT floor" is the average of the maximum 6-minute opacity levels, which is 8 percent.

5.1.3 Work Practices for BF Bell Leaks

For large bells:

- Maintain metal seats to minimize wear on seals;
- Observe BF top for VE monthly to identify beginning of leaks; measure opacity if VE positive;
  - If VE are positive, conduct opacity testing monthly;
  - If opacity exceeds 20 percent, initiate corrective action within 5 business days; and
  - If the opacity exceeds 20 percent again 10 days after the initial opacity exceedance, repair/replace the seal within 4 months.

For small bells:

- Maintain metal seats to minimize wear on seals; and
- Repair or replace seals prior to the metal throughput limit that has been proven and documented to produce no opacity from the small bell.

5.1.4 Work Practices for BF Casthouse Fugitives

- Measure opacity frequently during the tapping operation (*e.g.*, during two taps per month) with all openings closed (except for roof monitor) using EPA Method Alt-082 (camera) or Method 9; and
- Keep doors and other openings, except roof monitors, closed during all transfer operations to extent feasible and safe.

5.1.5 Work Practices for BF Iron Beaching

- Minimize height, slope, and speed of beaching;
- Use carbon dioxide shielding during beaching event; and/or use full or partial (hoods) enclosures around beached iron; and
- Conduct annual opacity testing using EPA Method 9 in 6-minute blocks for 4 hours.

5.1.6 Work Practices for BF Slag Handling and Storage Operations

- Limit opacity to 10 percent, as 6-minute average.

5.1.7 Work Practices for BOPF Shop Fugitives

- Develop and operate according to a "BOPF Shop Operating Plan" to minimize fugitive emissions and detect openings and leaks. The BOPF Shop Operating Plan may include:
  - List of all events that generate visible emissions (VE), including slopping, and steps company will take to reduce incidence rate;
  - Minimize hot iron pour/charge rate (minutes) and set a maximum pour rate in tons/second.
  - Schedule of regular inspections of BOPF shop structure for openings and leaks to the atmosphere;
  - Optimize positioning of hot metal ladles with respect to hood face and furnace mouth;
  - Optimize furnace tilt angle during charging and set a maximum tilt angle during charging;
  - Keep all openings, except roof monitors, closed, especially during transfer, to extent feasible and safe;
  - Use higher draft velocities to capture more fugitives at a given distance from hood, if possible; and
- Monitor opacity periodically (*e.g.*, twice per month) from all openings with EPA Method Alt-082 (camera) or with EPA Method 9.

5.2 Costs of Work Practices for UFIP Sources

Equipment and operating costs for the work practices to control UFIP emissions were obtained from vendors of equipment, as available, or were estimated using good engineering judgement (GEJ) along with experience with the industry. Similarly, labor estimates were based on EPA experience with the tasks needed to be performed to either operate equipment or perform VE and opacity tests. **Table 5-1** shows the estimated labor, capital, and annual costs of the work practices for the II&S industry based on the unit costs and the number of units at the facilities in the industry (shown in **Appendix H).** The labor, capital, and annual costs for the work practices for one emission unit used to develop the industry estimates in **Table 5-1** are also shown in **Appendix H** along with individual cost factors used in the estimates. Details of the costs for the identified control measures for the seven UFIP sources are discussed in the technical memorandum cited above and titled *Cost Estimates and Other Impacts for the Integrated Iron and Steel Risk and Technology Review*, available in the docket to this rule. (EPA, 2019b)

The estimated effectiveness of the work practices for each nonpoint source to reduce HAP emissions and the costs are combined in a ratio to produce a cost-effectiveness factor. **Table 5-2** shows the cost-effectiveness (CE) of control of HAP emissions at each nonpoint source using the work practices described above and the HAP emission reductions shown in **Table 4-1**. The CE values ranged from $19,636 per ton HAP removed (BOPF Shop Fugitives) to $15,788,388 per ton HAP removed (BF Iron Beaching) with an overall cost-effectiveness for all seven nonpoint sources at $43,971/ton HAP.

Table 5-1. Total Costs of the Work Practices for Nonpoint Sources in the II&S Industry

Nonpoint Source	Total Industry Costs		
	Labor	Capital	Annual
BF Unplanned Openings	$42,387	$1,468,841	$197,402
BF Unplanned Openings	$54,604	--	--
BF Bell Leaks	$12,326	$2,138,542	$922,229
BF Casthouse Fugitives	$63,005	$765,373	$676,890
BOPF Shop Fugitives	$58,967	$495,241	$437,988
BF Iron Beaching	$16,674	--	$37,955
Slag Handling & Storage	$190,731	$562,774	$117,087
Total Costs	**$438,694**	**$5,430,771**	**$2,389,551**

Table 5-2. Cost-Effectiveness of Work Practices at Nonpoint Sources at 8 II&S Facilities

Nonpoint Source	Total Annual Costs	HAP Reductions (TPY)	Cost Effectiveness $/ton HAP removed
BF Unplanned Openings	$239,789	0.50	$478,845
BF Planned Openings	$54,604	0.41	$134,359
BF Bell Leaks	$934,555	31	$30,392
BF Casthouse Fugitives	$739,895	0	N/A
BOPF Shop Fugitives	$496,955	25	$19,636
BF Iron Beaching	$54,629	0.0035	$15,788,388
Slag Handling & Storage	$307,818	7.4	$41,874
Overall Total	**$2,828,245**	**64**	**$43,971**

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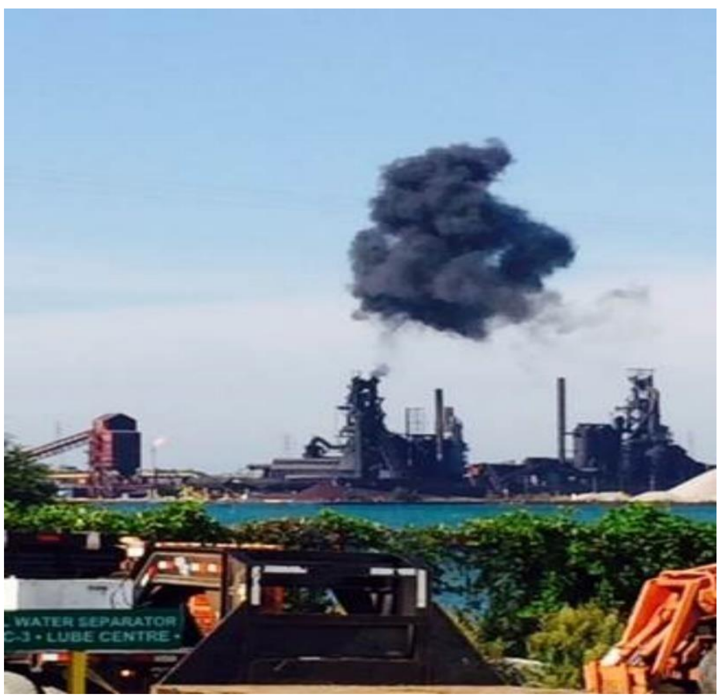
APPENDIX A:
PHOTOGRAPHS OF UFIP EVENTS

Bell Leaks

Beaching

BF Unplanned Openings



APPENDIX B:
SUMMARY OF NEW OPACITY DATA COLLECTED FROM II&S FACILITIES

Table B-1: Count of New Opacity Tests Analyzed by Facility and Source Type

Facility	BF Bleeder Valves – Planned Openings	BF Casthouse Fugitives	Beaching of Iron from BFs	BOPF Shop Fugitives	BF Slag Handling and Storage
CC-BurnsHarbor-IN	0	0	0	0	13
CC-Cleveland-OH	1	6	0	0	3
CC-Dearborn-MI	0	0	0	0	25
CC-IndianaHarbor-IN	1	0	3	0	26
CC-Middletown-OH	6	0	0	0	0
USS-Braddock-PA	5	12	0	3	54
USS-Gary-IN	2	12	3	6	14
USS-GraniteCity-IL	1	8	5	3	196

Table B-2: Maximum Six-Minute Average by Facility and Source Type Based on New Data

Facility	BF Bleeder Valves – Planned Openings	BF Casthouse Fugitives	Beaching of Iron from BFs	BOPF Shop Fugitives[a]	BF Slag Handling and Storage
CC-BurnsHarbor-IN	[no data]	[no data]	[no data]	[no data]	7.92
CC-Cleveland-OH	6.25	7.25	[no data]	[no data]	27.71
CC-Dearborn-MI	[no data]	[no data]	[no data]	[no data]	2.50
CC-IndianaHarbor-IN	8.33	[no data]	16.46	[no data]	14.58
CC-Middletown-OH	13.75	[no data]	[no data]	[no data]	[no data]
USS-Braddock-PA	25.42	3.54	[no data]	0.00	15.42
USS-Gary-IN	0.00	4.17	3.33	6.25	5.00
USS-GraniteCity-IL	10.42	7.50	31.38	2.50	19.17

[a] Three-minute averages were calculated in place of six-minute averages for BOPF shop fugitives.

Table B-3: Average of All New Opacity Readings by Facility and Source Type

Facility	BF Bleeder Valves – Planned Openings	BF Casthouse Fugitives	Beaching of Iron from BFs	BOPF Shop Fugitives	BF Slag Handling and Storage
CC-BurnsHarbor-IN	[no data]	[no data]	[no data]	[no data]	1.21
CC-Cleveland-OH	6.25	0.96	[no data]	[no data]	7.99
CC-Dearborn-MI	[no data]	[no data]	[no data]	[no data]	0.19
CC-IndianaHarbor-IN	6.35	[no data]	12.58	[no data]	1.26
CC-Middletown-OH	9.90	[no data]	[no data]	[no data]	[no data]
USS-Braddock-PA	3.39	0.20	[no data]	0.00	0.96
USS-Gary-IN	0.00	0.04	0.33	0.06	0.47
USS-GraniteCity-IL	8.08	0.24	6.33	0.13	2.22

Table B-4. Number of "Previous" Opacity Files Received per the 2022 114 Collection

Facility	BF casthouse fugitives	BOPF shop fugitives
CC-BurnsHarbor-IN	202	2
CC-Cleveland-OH	-	-
CC-Dearborn-MI	3	5
CC-IndianaHarbor-IN	51	6
CC-Middletown-OH	1	1

Table B-5. "Previous" Opacity Data for BOPF Shop at Gary, Burns Harbor, Dearborn and Indiana Harbor (IH) facilities

Facility	Date	Duration of test (minutes)	BOF Shop ID	Total minutes opacity = 0%	Total minutes Opacity was >0%	**Max 6-minute Opacity During test unless indicated otherwise**	Comments
IH	8/3/17	74 min	BOF 4SP	74 min	0	0%	
IH	8/4/17	255 min	BOF 4SP	255 min	0	0%	
IH	6/7/19	44 min	BOF 3SP	44 min	0	0%	
IH	6/7/19	109 min	BOF 3SP	109 min	0	0%	
IH	6/7/19	108 min	BOF 3SP	109 min	0	0%	
Burnsharbor	1/8/22	140 min	BOF	140 min	0 min	0%	
Burnsharbor	1/8/22	126 min	BOF	138 min	2 min	2.1%	
Dearborn	5/14/18	240 min	BOF	202 min	37 min	17.7% (6-min), 17.9% (3-min)	
Dearborn	11/17/21	130 min	BOF	127.5	2.5 min	2.1% (3-min)	
Dearborn	11/17/21	130 min	BOF	129 min	3 min	3.75% (3 min. avg)	
Gary	2/11/22	120 min	BOF #1	120 min	0 min	0%	
Gary	2/14/22	120 min	BOF #1	118.5 min	1.5 min	4.2% (6-min), 8.4% (3-min)	
Gary	2/22/22	120 min	BOF #1	120 min	0 min	0%	
Gary	4/15/22	120 min	BOF ?	118 min	2 min	6% (6-min), 12% (3-min)	
Gary	4/18/22	90 min	BOF ?	116.875 min	3.25 min	5.6% (6-min), 11% (3-min)?	
Gary	4/20/22	120 min	BOF #1	120 min	0 min	0%	
Gary	4/22/22	120 min	BOF #1	120 min	0 min	0%	
Gary	4/25/22	120 min	BOF #1	120 min	0 min	0%	
Gary	4/27/22	30 min	BOF ?	28 min	2 min	16.25% (6-min), 32.5% (3-min)?	
Gary	4/27/22	60 min	BOF	57 min	3 min	2.7%	
Gary	4/29/22	60 min	BOF ?	60 min	0 min	0%	
Gary	5/2/22	60 min	BOF ?	57 min	3 min	17.9% (6-min), 35.8% (3-min)	
Gary	5/4/22	120 min	BOF	120 min	0 min	0%	
Gary	5/6/22	120 min	BOF	120 min	0 min	0%	
Gary	5/9/22	120 min	BOF	120 min	0 min	0%	
Gary	5/11/22	120 min	BOF	120 min	0 min	0%	
Gary	5/16/22	120 min	BOF	120 min	0 min	0%	
Gary	5/18/22	60 min	BOF	60 min	0 min	0%	
Gary	5/20/22	60 min	BOF	60 min	0 min	0%	
Gary	5/23/22	60 min	BOF	60 min	0 min	0%	
Gary	5/24/22	120 min	BOF	120 min	0 min	0%	
Gary	5/25/22	120 min	BOF	120 min	0 min	0%	
Gary	5/26/22	120 min	BOF	120 min	0 min	0%	
Gary	5/27/22	120 min	BOF	120 min	0 min	0%	
Gary	5/31/22	120 min	BOF	120 min	0 min	0%	
Gary	5/31/22	120 min	BOF	118 min	2 min	5.6% (6-min), 11.2% (3-min)	
Gary	6/1/22	120 min	BOF	120 min	0 min	0%	

Table B-6. Opacity Data for BF Casthouse at the US Steel Gary and Indiana Harbor Facilities

Facility	Date	Duration of test (minutes)	BF Casthouse	Total minutes that opacity = 0%	Total minutes opacity was > 0%	**<u>Max</u> 6-minute Opacity During test**	Comments
Gary	3/16/22	136 min	BF #14	136	0	0%	
Gary	3/15/22	118 min	BF	118 min	0	0%	
Gary	2/28/22	149 min	BF	149 min	0	0%	
Gary	2/21/22	121 min	BF #4	119.75 min	1.25 min	3.13%	
Gary	2/18/22	120 min	BF #4	119.25 min	0.75 min	2.5%	
Gary	2/10/22	120 min	BF #4	120 min	0	0%	
Gary	2/7/22	120 min	BF #6	119.25 min	0.75 min	1.7%	
Gary	2/22/22	120 min	BF #8	120 min	0	0%	
Gary	2/11/22	102 min	BF #8	102 min	0	0%	
Gary	2/8/22	234 min	BF #8	232.5 min	1.5 min	4.17%	
Indiana Harbor (IH)	6/7/19	44 min	BOF 3SP	44 min	0	0%	
IH	6/7/19	109 min	BOF 3SP	109 min	0	0%	
IH	6/7/19	108 min	BOF 3SP	109 min	0	0%	
IH	8/3/17	74 min	BOF 4SP	74 min	0	0%	
IH	8/4/17	255 min	BOF 4SP	255 min	0	0%	
IH	4/29/19	179 min	BF IH3	179 min	0	0%	
IH	4/29/19	130 min	BF IH3	179 min	0	0%	
IH	5/4/19	239 min	BF IH3	179 min	0	0%	
IH	10/25/16	? min	BF IH4	? min	?	1.9%	
IH	9/10/21	74 min	BF IH4	74 min	0	0%	
IH	9/10/21	164 min	BF IH4	164 min	0	0%	
IH	9/10/21	219 min	BF IH4	219 min	0	0%	
IH	10/9/18	179 min	BF IH7	179 min	0	0%	
IH	10/11/18	150 min	BF IH7	?? min	?	1%	
IH	10/11/18	136 min	BF IH7	?? min	?	1.7%	
IH	2/20/19	145 min	BF IH7	145 min	0	0%	
IH	2/20/19	205 min	BF IH7	205 min	0	0%	
IH	2/21/19	185 min	BF IH7	185 min	0	0%	

APPENDIX C:
PM EMISSION FACTORS USED TO ESTIMATE EMISSIONS FROM II&S NONPOINT SOURCES

Table C-1. Standard Emissions Reduction Values by Work Practice

Source	Work Practice	Estimated Emissions Reduction Value	Calculated Emissions Reduction Factor
BF Unplanned Openings	Install and operate devices to continuously measure/monitor material levels in the furnace, using alarms to inform operators of static conditions.	0.1	Apply a factor of 1-[sum of values presented in column to the left (max 0.5)]
	Install and operate instruments on the furnace to monitor temperature and pressure.	0.1	
	Conduct raw material screening.	0.15	
	Develop a plan that explains how the facility will implement these requirements.	0.15	
BF Bell Leaks	Replace or repair small bell seals every 6 months.	0.75	Assume 50% of emissions come from the large bell and 50% of emissions come from the small bell. No facilities provided information on changing their large bell seals, so no adjustment is needed regarding large bell work practices. Apply a factor as low as 0.75 for one furnace based on how often small bell seals were reported to be replaced. Furnaces repairing their small bell seal every 6 months or less have a factor of 0.75. The furnace with the lowest reported frequency of repairing the bell seal has a factor of 1. Furnaces with a frequency of x which is between 6 months and the max frequency have a factor of 1-0.25*(max frequency – x)/(max frequency).

Source	Work Practice	Estimated Emissions Reduction Value	Calculated Emissions Reduction Factor
BOP Shop Fugitives	Keep all openings closed during tapping and material transfer events.	0.125	Apply a factor of 1-[sum of values presented in column to the left (max 0.5)]
	Optimize positioning of hot metal ladles with respect to hood face and furnace mouth.	0.03	
	Set a maximum hot iron pour/charge rate (pounds/second) for the first 20 seconds of hot metal charge.	0.225	
	Set a minimum flowrate of the secondary emission capture system during hot metal charge.	0.03	
	Set a minimum number of times the furnace should be rocked between scrap charge and hot metal charge.	0.03	
	Set a maximum furnace tilt angle during hot metal charging.	0.03	
	Create an outline of procedures to attempt to reduce slopping.	0.03	
Beaching	Have full or partial enclosures for the beaching process.	0.125	Apply a factor of 1-[sum of values presented in column to the left]
	Use CO_2 to suppress fumes.	0.125	
	Minimize the height, slope, and speed of beaching.	0.25	
Slag Handling	Use a water system over pit areas.	0.25	Apply a factor of 1-[sum of values presented in column to the left]
	Use water fog spray systems.	0.25	

Table C-2. Emissions Reduction Values by Source and Facility

CC-BurnsHarbor-IN			
Source	**Work Practice**	**Estimated Emissions Reduction Value**	**Notes**
BF Unplanned Openings	Install and operate devices to continuously measure/monitor material levels in the furnace, using alarms to inform operators of static conditions.	0.1	Work practice is currently in use by facility
	Install and operate instruments on the furnace to monitor temperature and pressure.	0.1	Work practice is currently in use by facility
	Conduct raw material screening.	0.15	Work practice is currently in use by facility
	Develop a plan that explains how the facility will implement these requirements.	0	Work practice is not currently in use by this facility
BF Bell Leaks	Replace or repair small bell seals every 6 months.	0.75	Small bell seals are replaced every 6 months for both furnaces
BOP Shop Fugitives	Keep all openings closed during tapping and material transfer events.	0	Work practice not in use by facility
	Optimize positioning of hot metal ladles with respect to hood face and furnace mouth.	0.03	Work practice is currently in use by facility
	Set a maximum hot iron pour/charge rate (pounds/second) for the first 20 seconds of hot metal charge.	0.225	Work practice is currently in use by facility
	Set a minimum flowrate of the secondary emission capture system during hot metal charge.	0	Work practice is not in use by facility
	Set a minimum number of times the furnace should be rocked between scrap charge and hot metal charge.	0	This information was not collected by the 114 questionnaire
	Set a maximum furnace tilt angle during hot metal charging.	0.03	Work practice is currently in use by facility
	Create an outline of procedures to attempt to reduce slopping.	0	This information was not collected by the 114 questionnaire
Beaching	Have full or partial enclosures for the beaching process.	0.125	3-sided enclosure
	Use CO_2 to suppress fumes.	0.125	Work practice is currently in use by facility
	Minimize the height, slope, and speed of beaching.	0.25	Work practice is currently in use by facility
Slag Handling	Use a water system over pit areas.	0.25	Work practice is currently in use by facility
	Use water fog spray systems.	0.25	Work practice is currently in use by facility

CC-Cleveland-OH			
Source	**Work Practice**	**Estimated Emissions Reduction Value**	**Notes**
BF Unplanned Openings	Install and operate devices to continuously measure/monitor material levels in the furnace, using alarms to inform operators of static conditions.	0	Work practice not in use by facility
	Install and operate instruments on the furnace to monitor temperature and pressure.	0.1	Work practice is currently in use by facility
	Conduct raw material screening.	0	Work practice is not currently in use by this facility
	Develop a plan that explains how the facility will implement these requirements.	0	Work practice is not currently in use by this facility
BF Bell Leaks	Replace or repair small bell seals every 6 months.	1	Only 1 of 2 BFs has a two-bell top. Seals are replaced every 3-4 years. This is the lowest frequency of replacing small bell seals reported by facilities.
BOP Shop Fugitives	Keep all openings closed during tapping and material transfer events.	0	Work practice not in use by facility
	Optimize positioning of hot metal ladles with respect to hood face and furnace mouth.	0.03	Work practice is currently in use by facility
	Set a maximum hot iron pour/charge rate (pounds/second) for the first 20 seconds of hot metal charge.	0.225	Work practice is currently in use by facility
	Set a minimum flowrate of the secondary emission capture system during hot metal charge.	0.03	Work practice is currently in use by facility
	Set a minimum number of times the furnace should be rocked between scrap charge and hot metal charge.	0	This information was not collected by the 114 questionnaire
	Set a maximum furnace tilt angle during hot metal charging.	0.03	Work practice is currently in use by facility
	Create an outline of procedures to attempt to reduce slopping.	0	This information was not collected by the 114 questionnaire
Beaching	Have full or partial enclosures for the beaching process.	--	No beaching at this facility
	Use CO_2 to suppress fumes.	--	
	Minimize the height, slope, and speed of beaching.	--	
Slag Handling	Use a water system over pit areas.	0.25	Work practice is currently in use by facility
	Use water fog spray systems.	0	Work practice is not currently in use by this facility

CC-Dearborn-MI			
Source	**Work Practice**	**Estimated Emissions Reduction Value**	**Notes**
BF Unplanned Openings	Install and operate devices to continuously measure/monitor material levels in the furnace, using alarms to inform operators of static conditions.	0.1	Work practice is currently in use by facility
	Install and operate instruments on the furnace to monitor temperature and pressure.	0.1	Work practice is currently in use by facility
	Conduct raw material screening.	0.15	Work practice is currently in use by facility
	Develop a plan that explains how the facility will implement these requirements.	0	Work practice is not currently in use by this facility
BF Bell Leaks	Replace or repair small bell seals every 6 months.	--	BF does not have bells
BOP Shop Fugitives	Keep all openings closed during tapping and material transfer events.	0	Work practice not in use by facility
	Optimize positioning of hot metal ladles with respect to hood face and furnace mouth.	0.03	Work practice is currently in use by facility
	Set a maximum hot iron pour/charge rate (pounds/second) for the first 20 seconds of hot metal charge.	0.225	Work practice is currently in use by facility
	Set a minimum flowrate of the secondary emission capture system during hot metal charge.	0.03	Work practice is currently in use by facility
	Set a minimum number of times the furnace should be rocked between scrap charge and hot metal charge.	0	This information was not collected by the 114 questionnaire
	Set a maximum furnace tilt angle during hot metal charging.	0.03	Work practice is currently in use by facility
	Create an outline of procedures to attempt to reduce slopping.	0	This information was not collected by the 114 questionnaire
Beaching	Have full or partial enclosures for the beaching process.	0.125	3-sided enclosure
	Use CO_2 to suppress fumes.	0.125	Work practice is currently in use by facility
	Minimize the height, slope, and speed of beaching.	0.25	Work practice is currently in use by facility
Slag Handling	Use a water system over pit areas.	0.25	Work practice is currently in use by facility
	Use water fog spray systems.	0	Work practice is not currently in use by this facility

CC-IndianaHarbor-IN			
Source	**Work Practice**	**Estimated Emissions Reduction Value**	**Notes**
BF Unplanned Openings	Install and operate devices to continuously measure/monitor material levels in the furnace, using alarms to inform operators of static conditions.	0	Work practice not in use by facility
	Install and operate instruments on the furnace to monitor temperature and pressure.	0.1	Work practice is currently in use by facility
	Conduct raw material screening.	0	Work practice is not currently in use by this facility
	Develop a plan that explains how the facility will implement these requirements.	0	Work practice is not currently in use by this facility
BF Bell Leaks	Replace or repair small bell seals every 6 months.	0.964	Only 2 of 3 BFs have a two-bell top. Seals are replaced approximately every 3 years or 5 MM NTHM production.
BOP Shop Fugitives	Keep all openings closed during tapping and material transfer events.	0	Work practice not in use by facility
	Optimize positioning of hot metal ladles with respect to hood face and furnace mouth.	0.03	Work practice is currently in use by facility
	Set a maximum hot iron pour/charge rate (pounds/second) for the first 20 seconds of hot metal charge.	0.225	Work practice is currently in use by facility
	Set a minimum flowrate of the secondary emission capture system during hot metal charge.	0	Work practice is not in use by facility
	Set a minimum number of times the furnace should be rocked between scrap charge and hot metal charge.	0	This information was not collected by the 114 questionnaire
	Set a maximum furnace tilt angle during hot metal charging.	0.03	Work practice is currently in use by facility
	Create an outline of procedures to attempt to reduce slopping.	0	This information was not collected by the 114 questionnaire
Beaching	Have full or partial enclosures for the beaching process.	0	No enclosure
	Use CO_2 to suppress fumes.	0	Work practice is not in use by facility
	Minimize the height, slope, and speed of beaching.	0.25	Work practice is currently in use by facility
Slag Handling	Use a water system over pit areas.	0.25	Work practice is currently in use by facility
	Use water fog spray systems.	0	Work practice is not currently in use by this facility

CC-Middletown-OH			
Source	**Work Practice**	**Estimated Emissions Reduction Value**	**Notes**
BF Unplanned Openings	Install and operate devices to continuously measure/monitor material levels in the furnace, using alarms to inform operators of static conditions.	0.05	Stockline monitor but no alarm
	Install and operate instruments on the furnace to monitor temperature and pressure.	0.1	Work practice is currently in use by facility
	Conduct raw material screening.	0.15	Work practice is currently in use by facility
	Develop a plan that explains how the facility will implement these requirements.	0	Work practice is not currently in use by this facility
BF Bell Leaks	Replace or repair small bell seals every 6 months.	0.75	Seals are replaced every 8 weeks
BOP Shop Fugitives	Keep all openings closed during tapping and material transfer events.	0	Work practice not in use by facility
	Optimize positioning of hot metal ladles with respect to hood face and furnace mouth.	0.03	Work practice is currently in use by facility
	Set a maximum hot iron pour/charge rate (pounds/second) for the first 20 seconds of hot metal charge.	0.225	Work practice is currently in use by facility
	Set a minimum flowrate of the secondary emission capture system during hot metal charge.	0	Work practice is not in use by facility
	Set a minimum number of times the furnace should be rocked between scrap charge and hot metal charge.	0	This information was not collected by the 114 questionnaire
	Set a maximum furnace tilt angle during hot metal charging.	0.03	Work practice is currently in use by facility
	Create an outline of procedures to attempt to reduce slopping.	0	This information was not collected by the 114 questionnaire
Beaching	Have full or partial enclosures for the beaching process.	0	Facility did not provide this information - no beaching at this facility in 2019, 2020, or 2021
	Use CO_2 to suppress fumes.	0	
	Minimize the height, slope, and speed of beaching.	0	
Slag Handling	Use a water system over pit areas.	0	Facility did not provide this information
	Use water fog spray systems.	0	Facility did not provide this information

USS-Braddock-PA			
Source	**Work Practice**	**Estimated Emissions Reduction Value**	**Notes**
BF Unplanned Openings	Install and operate devices to continuously measure/monitor material levels in the furnace, using alarms to inform operators of static conditions.	0.1	Work practice is currently in use by facility
	Install and operate instruments on the furnace to monitor temperature and pressure.	0.1	Work practice is currently in use by facility
	Conduct raw material screening.	0.15	Work practice is currently in use by facility
	Develop a plan that explains how the facility will implement these requirements.	0	Facility did not provide this information
BF Bell Leaks	Replace or repair small bell seals every 6 months.	1	Frequency of seal repairs/replacements was claimed as CBI
BOP Shop Fugitives	Keep all openings closed during tapping and material transfer events.	0	Work practice not in use by facility
	Optimize positioning of hot metal ladles with respect to hood face and furnace mouth.	0.03	Work practice is currently in use by facility
	Set a maximum hot iron pour/charge rate (pounds/second) for the first 20 seconds of hot metal charge.	0.225	Work practice is currently in use by facility
	Set a minimum flowrate of the secondary emission capture system during hot metal charge.	0	Work practice is not in use by facility
	Set a minimum number of times the furnace should be rocked between scrap charge and hot metal charge.	0	This information was not collected by the 114 questionnaire
	Set a maximum furnace tilt angle during hot metal charging.	0.03	Work practice is currently in use by facility
	Create an outline of procedures to attempt to reduce slopping.	0	This information was not collected by the 114 questionnaire
Beaching	Have full or partial enclosures for the beaching process.	0.125	2-sided enclosure
	Use CO_2 to suppress fumes.	0	Work practice is not in use by facility
	Minimize the height, slope, and speed of beaching.	0.25	Work practice is currently in use by facility
Slag Handling	Use a water system over pit areas.	0.25	Work practice is currently in use by facility
	Use water fog spray systems.	0	Work practice is not currently in use by this facility

USS-Gary-IN			
Source	**Work Practice**	**Estimated Emissions Reduction Value**	**Notes**
BF Unplanned Openings	Install and operate devices to continuously measure/monitor material levels in the furnace, using alarms to inform operators of static conditions.	0.1	Work practice is currently in use by facility
	Install and operate instruments on the furnace to monitor temperature and pressure.	0.1	Work practice is currently in use by facility
	Conduct raw material screening.	0.15	Work practice is currently in use by facility
	Develop a plan that explains how the facility will implement these requirements.	0	Work practice is not currently in use by this facility
BF Bell Leaks	Replace or repair small bell seals every 6 months.	1	Frequency of seal repairs/replacements was claimed as CBI
BOP Shop Fugitives	Keep all openings closed during tapping and material transfer events.	0	Work practice not in use by facility
	Optimize positioning of hot metal ladles with respect to hood face and furnace mouth.	0.03	Work practice is currently in use by facility
	Set a maximum hot iron pour/charge rate (pounds/second) for the first 20 seconds of hot metal charge.	0.225	Work practice is currently in use by facility
	Set a minimum flowrate of the secondary emission capture system during hot metal charge.	0	Work practice is not in use by facility
	Set a minimum number of times the furnace should be rocked between scrap charge and hot metal charge.	0	This information was not collected by the 114 questionnaire
	Set a maximum furnace tilt angle during hot metal charging.	0.03	Work practice is currently in use by facility
	Create an outline of procedures to attempt to reduce slopping.	0	This information was not collected by the 114 questionnaire
Beaching	Have full or partial enclosures for the beaching process.	0.125	Fully enclosed
	Use CO_2 to suppress fumes.	0.125	Work practice is currently in use by facility
	Minimize the height, slope, and speed of beaching.	0.25	Work practice is currently in use by facility
Slag Handling	Use a water system over pit areas.	0.25	Work practice is currently in use by facility
	Use water fog spray systems.	0	Work practice is not currently in use by this facility

USS-GraniteCity-IL			
Source	**Work Practice**	**Estimated Emissions Reduction Value**	**Notes**
BF Unplanned Openings	Install and operate devices to continuously measure/monitor material levels in the furnace, using alarms to inform operators of static conditions.	0.05	Stockline monitor but no alarm
	Install and operate instruments on the furnace to monitor temperature and pressure.	0.1	Work practice is currently in use by facility
	Conduct raw material screening.	0.15	Work practice is currently in use by facility
	Develop a plan that explains how the facility will implement these requirements.	0	Work practice is not currently in use by this facility
BF Bell Leaks	Replace or repair small bell seals every 6 months.	1	Frequency of seal repairs/replacements was claimed as CBI
BOP Shop Fugitives	Keep all openings closed during tapping and material transfer events.	0	Work practice not in use by facility
	Optimize positioning of hot metal ladles with respect to hood face and furnace mouth.	0.03	Work practice is currently in use by facility
	Set a maximum hot iron pour/charge rate (pounds/second) for the first 20 seconds of hot metal charge.	0.225	Work practice is currently in use by facility
	Set a minimum flowrate of the secondary emission capture system during hot metal charge.	0.03	Work practice is currently in use by facility
	Set a minimum number of times the furnace should be rocked between scrap charge and hot metal charge.	0	This information was not collected by the 114 questionnaire
	Set a maximum furnace tilt angle during hot metal charging.	0.03	Work practice is currently in use by facility
	Create an outline of procedures to attempt to reduce slopping.	0	This information was not collected by the 114 questionnaire
Beaching	Have full or partial enclosures for the beaching process.	0	No enclosure
	Use CO_2 to suppress fumes.	0	Work practice is not in use by facility
	Minimize the height, slope, and speed of beaching.	0.25	Work practice is currently in use by facility
Slag Handling	Use a water system over pit areas.	0.25	Work practice is currently in use by facility
	Use water fog spray systems.	0	Work practice is not currently in use by this facility

Table C-3. Estimated Nonpoint Emissions by Source and Facility

Source	PM Emissions (TPY)	Frequency[a]		Activity[b]		Emissions Reduction Factor
CC-BurnsHarbor-IN						
BF Unplanned Openings	6	48	events/yr	by unit (2)		0.65
BF Planned Openings	13	654	events/yr	by unit (2)		--
BF Bell Leaks	488	continuous		4,007,423	TPY iron	0.75
BF Casthouse Fugitives	200	continuous		4,007,423	TPY iron	--
BOPF Shop Fugitives	664	continuous		4,470,258	TPY steel	--
BOPF Top Fugitives	455	continuous		4,470,258	TPY steel	0.715
Tapping Steel	74	continuous		4,470,258	TPY steel	0.715
Iron Sources	135	continuous		4,007,423	TPY iron	0.715
Charging	60	continuous		4,007,423	TPY iron	--
HM Transfer	19	continuous		4,007,423	TPY iron	--
DeSulf	110	continuous		4,007,423	TPY iron	--
Beaching	0.07	700	TPY	by unit (2)		0.5
Slag Pits	102	continuous		1,407,335	TPY slag	0.5
Total	**1,475**					
CC-Cleveland-OH						
BF Unplanned Openings	9	48	events/yr	by unit (2)		0.9
BF Planned Openings	5	266	events/yr	by unit (2)		--
BF Bell Leaks	205	continuous		1,260,588[c]	TPY iron	1
BF Casthouse Fugitives	122	continuous		2,437,140	TPY iron	--
BOPF Shop Fugitives	398	continuous		2,813,021	TPY steel	--
BOPF Top Fugitives	275	continuous		2,813,021	TPY steel	0.685
Tapping Steel	44	continuous		2,813,021	TPY steel	0.685
Iron Sources	79	continuous		2,437,140	TPY iron	0.685
Charging	37	continuous		2,437,140	TPY iron	--
HM Transfer	12	continuous		2,437,140	TPY iron	--
DeSulf	67	continuous		2,437,140	TPY iron	--
Beaching	0.00[d]	700	TPY	by unit (2)		1
Slag Pits	110	continuous		1,009,563	TPY slag	0.75
Total	**849**					

Source	PM Emissions (TPY)	Frequency[a]		Activity[b]		Emissions Reduction Factor
CC-Dearborn-MI						
BF Unplanned Openings	3	48	events/yr	by unit (1)		0.65
BF Planned Openings	3	133	events/yr	by unit (1)		--
BF Bell Leaks	0	continuous		2,031,843	TPY iron	--
BF Casthouse Fugitives	102	continuous		2,031,843	TPY iron	--
BOPF Shop Fugitives	353	continuous		2,536,194	TPY steel	--
BOPF Top Fugitives	248	continuous		2,536,194	TPY steel	0.685
Tapping Steel	40	continuous		2,536,194	TPY steel	0.685
Iron Sources	66	continuous		2,031,843	TPY iron	0.685
Charging	30	continuous		2,031,843	TPY iron	--
HM Transfer	10	continuous		2,031,843	TPY iron	--
DeSulf	56	continuous		2,031,843	TPY iron	--
Beaching	0.03	700	TPY	by unit (1)		0.5
Slag Pits	87	continuous		799,126	TPY slag	0.75
Total	**548**					
CC-IndianaHarbor-IN						
BF Unplanned Openings	9	48	events/yr	by unit (2)		0.9
BF Planned Openings	4	193	events/yr	by unit (2)		--
BF Bell Leaks	251	continuous		1,600,000[c]	TPY iron	0.964
BF Casthouse Fugitives	235	continuous		4,700,000	TPY iron	--
BOPF Shop Fugitives	656	continuous		4,200,000	TPY steel	--
BOPF Top Fugitives	428	continuous		4,200,000	TPY steel	0.715
Tapping Steel	69	continuous		4,200,000	TPY steel	0.715
Iron Sources	159	continuous		4,700,000	TPY iron	0.715
Charging	71	continuous		4,700,000	TPY iron	--
HM Transfer	22	continuous		4,700,000	TPY iron	--
DeSulf	129	continuous		4,700,000	TPY iron	--
Beaching	0.10	700	TPY	by unit (2)		0.75
Slag Pits	172	continuous		1,580,000	TPY slag	0.75
Total	**1,326**					

Source	PM Emissions (TPY)	Frequency[a]		Activity[b]		Emissions Reduction Factor
CC-Middletown-OH						
BF Unplanned Openings	3	48	events/yr	by unit (1)		0.7
BF Planned Openings	0	6	events/yr	by unit (1)		--
BF Bell Leaks	246	continuous		2,020,451	TPY iron	0.75
BF Casthouse Fugitives	101	continuous		2,020,451	TPY iron	--
BOPF Shop Fugitives	124	continuous		472,744	TPY steel	--
BOPF Top Fugitives	48	continuous		472,744	TPY steel	0.715
Tapping Steel	8	continuous		472,744	TPY steel	0.715
Iron Sources	68	continuous		2,020,451	TPY iron	0.715
Charging	30	continuous		2,020,451	TPY iron	--
HM Transfer	10	continuous		2,020,451	TPY iron	--
DeSulf	56	continuous		2,020,451	TPY iron	--
Beaching	0.07	700	TPY	by unit (1)		1
Slag Pits	96	continuous		660,634	TPY slag	1
Total	**571**					
USS-Braddock-PA						
BF Unplanned Openings	6	48	events/yr	by unit (2)		0.65
BF Planned Openings	3	150	events/yr	by unit (2)		--
BF Bell Leaks	366	continuous		2,253,630	TPY iron	1
BF Casthouse Fugitives	113	continuous		2,253,630	TPY iron	--
BOPF Shop Fugitives	396	continuous		2,701,327	TPY steel	--
BOPF Top Fugitives	275	continuous		2,701,327	TPY steel	0.715
Tapping Steel	44	continuous		2,701,327	TPY steel	0.715
Iron Sources	76	continuous		2,253,630	TPY iron	0.715
Charging	34	continuous		2,253,630	TPY iron	--
HM Transfer	11	continuous		2,253,630	TPY iron	--
DeSulf	62	continuous		2,253,630	TPY iron	--
Beaching	0.08	700	TPY	by unit (2)		0.625
Slag Pits	51	continuous		470,994	TPY slag	0.75
Total	**935**					

Source	PM Emissions (TPY)	Frequency[a]		Activity[b]		Emissions Reduction Factor
USS-Gary-IN						
BF Unplanned Openings	13	48	events/yr	by unit (4)		0.65
BF Planned Openings	10	476	events/yr	by unit (4)		--
BF Bell Leaks	322	continuous		1,978,609[e]	TPY iron	1
BF Casthouse Fugitives	256	continuous		5,121,867	TPY iron	--
BOPF Shop Fugitives	868	continuous		5,871,382	TPY steel	--
BOPF Top Fugitives	598	continuous		5,871,382	TPY steel	0.715
Tapping Steel	97	continuous		5,871,382	TPY steel	0.715
Iron Sources	173	continuous		5,121,867	TPY iron	0.715
Charging	77	continuous		5,121,867	TPY iron	--
HM Transfer	24	continuous		5,121,867	TPY iron	--
DeSulf	141	continuous		5,121,867	TPY iron	--
Beaching	0.13	700	TPY*	by unit (4)		0.5
Slag Pits	172	continuous		1,580,467	TPY slag	0.75
Total	**1,640**					
USS-GraniteCity-IL						
BF Unplanned Openings	7	48	events/yr	by unit (2)		0.7
BF Planned Openings	5	246	events/yr	by unit (2)		--
BF Bell Leaks	169	continuous		1,042,769[c]	TPY iron	1
BF Casthouse Fugitives	111	continuous		2,229,682	TPY iron	--
BOPF Shop Fugitives	377	continuous		2,689,151	TPY steel	--
BOPF Top Fugitives	262	continuous		2,689,151	TPY steel	0.685
Tapping Steel	42	continuous		2,689,151	TPY steel	0.685
Iron Sources	72	continuous		2,229,682	TPY iron	0.685
Charging	33	continuous		2,229,682	TPY iron	--
HM Transfer	11	continuous		2,229,682	TPY iron	--
DeSulf	61	continuous		2,229,682	TPY iron	--
Beaching	0.10	700	TPY	by unit (2)		0.75
Slag Pits	82	continuous		750,594	TPY slag	0.75
Total	**752**					

[a] The number of BF planned openings was estimated using facility responses to the 2022 section 114 collection. The frequency of all other estimates are described in detail in the technical memorandum titled *Development of Emissions Estimates for Fugitive or Intermittent HAP Emission Sources for an Example II&S Facility for Input to the RTR Risk Assessment* (EPA, 2019a)

[b] Production in the most recent typical year for U.S. Steel facilities was claimed as confidential in the 2022 section 114 collection; therefore, the production values reported in the 2011 section 114 collection were used for U.S. Steel's active units.

[c] One of the active BFs for this facility was reported to have a bell-less top in the 2022 section 114 collection. The activity recorded is that of any active BFs with two-bell tops.

[d] Responses to the 2022 section 114 collection indicated that there was no beaching at the CC-Cleveland-OH facility.

[e] Responses to the 2022 section 114 collection indicated that two of the active BFs have bell-less tops.

APPENDIX D:
EMISSION REDUCTION FACTOR DETERMINATION FOR PROPOSED BF CASTHOUSE FUGITIVE, BOPF SHOP FUGITIVE, AND SLAG PROCESSING, HANDLING, AND STORAGE LIMITS

Table D-1. Emission Reduction Factor Determination for BF Planned Openings

Facility	Max 6-Minute Opacity (%)	Source	Emission Reduction	Emission Reduction Basis
CC-BurnsHarbor-IN	[no data]	[no data]	50%	Default value
CC-Cleveland-OH	6.25	2022 114 data	0%	Max is already below 8% limit
CC-Dearborn-MI	[no data]	[no data]	50%	Default value
CC-IndianaHarbor-IN	8.33	2022 114 data	4%	(max - 8%)/max
CC-Middletown-OH	13.75	2022 114 data	42%	(max - 8%)/max
USS-Braddock-PA	25.42	2022 114 data	50%	Default value; (max - 8%)/max > 50%
USS-Gary-IN	0	2022 114 data	0%	Max is already below 8% limit
USS-GraniteCity-IL	10.42	2022 114 data	23%	(max - 8%)/max

APPENDIX E:
COMPONENTS IN A STANDARD OPERATING PLAN TO REDUCE UNPLANNED BLEEDER OPENINGS (USOPL)

Alarms, Operational and Maintenance Procedural Changes

- Create acceptable ranges and alarms for top temperature (minimum temperature assumed to be above 212°F), pressure differential across the burden, stockline movement (descent rate), and rate of charges (how many charges over a one hour period).
- Revise SOPs to dictate the steps to address alarms and potential bridging in burden, including when to, and how to, check the furnace.
- Create or review an USOPL that instructs operators how to change burden distribution when burden descent problems are found, such as changing charging sequence, armor position, bell opening speed, and/or bell opening depth.

Raw Material Practices

- Review effectiveness of the screening equipment for raw materials.
- Ensure weighing systems for coke, pellets and PCI are calibrated and accurate.
- Ensure there is a moisture sensor in the cold blast and measurement of all sources of moisture into the furnace and that these instruments are accurate and maintained.
- Review purchasing specifications of raw materials to ensure purchasing department purchases quality materials, and take a larger number of samples to confirm actual delivered material meets specs.
- Develop or review the SOP for raw material selection (e.g. from where in the pile given atmospheric conditions), raw material blending procedures for raw materials that do not meet minimum specifications or are of poor quality, and screening procedures. Include actions to take when using Destock coke.
- Review the number and appropriateness of instruments and alarms in the gas cleaner system to reduce the number of instances of high back pressure and thus high top pressure.

BF Monitoring and Control Equipment

- Install modern (microwave) stockline monitoring equipment. Several microwave monitors ensure accurate reading of entire top of burden.
- Install “profile meter” and “in-burden probe” to gather data necessary to assess conditions in the furnace.
- Develop and install furnace software/models to analyze meter and probe data and make changes to charging sequence to mitigate furnace conditions that lead to instability.
- Install clean gas bleeder valve.
- Upgrade or install variable throat venturi system to ensure it can quickly adjust to furnace top pressure changes.
- Install “movable armor” to allow for accurate burden distribution.
- Install “bell-less top” to allow for accurate burden distribution.

Table E-1. Example Components of a Standard Operating Plan To Reduce Unplanned Bleeder Openings (USOPL)

Category	Components of Unplanned Opening Standard Operating Plan (USOPL)
Furnace Top	Two bell system
	Bell-less top
Normal Operations	Normal range of top temperature
	Normal range of burden pressure differential (dP)
	Normal burden descent pattern
	Normal charge rate (number of charges per hours)
	Charging (e.g., speed of large bell opening, how far open)
Alarms for Abnormal Conditions	Alarms for top temperature deviations
	Alarms for burden dP deviations
	Alarms for stockline movement (e.g., failure to descend at normal rate, ft/min)
	Alarms if skip car cannot dump (waiting for burden to descend)
	Alarm for permeability deviations
Correcting Abnormal Conditions	Top temperature deviations
	Burden dp deviations
	Stockline movement alarms
	Skip car not dumping issues
	Permeability deviations
	Documenting/investigating causes of abnormal condition
Monitoring Instruments	Electronic (microwave) stockline measurement
	Burden distribution instruments (profile meter or in-burden probe)
Raw Materials	Raw material handling during rain/snow (selection, screening, blending)
	Sampling pellets upon delivery
	Sampling coke upon delivery
Equipment/Computer Models	Burden distribution model
	Charging sequence model
	Permeability model
	Manufacturer of operating software
	Movable armor for burden distribution
	Variable throat venturi
	Bischoff scrubber
	Clean gas bleeder

APPENDIX F:
EXAMPLE OPERATING PLAN FOR PLANNED OPENINGS OF BF BLEEDER VALVES (PSOPL)

The purpose of the planned opening standard operating plan (PSOPL) is to minimize visible emissions during BF (BF) bleeder valve (BV) planned openings. Records should be kept on-site for 5 years and made available for inspection at any time.

1. The following items shall be recorded before, during, and after the BV planned openings as part of the PSOPL to minimize emissions:

   a. Record the time and duration of BV planned openings.
   b. Record BF operating parameter data during the period that the facility is preparing for a planned opening and during the time of the BV opening itself, including which bleeder opened, top pressure and hot blast pressure leading up to and during the opening;
   c. Identify and record the primary operational reason for each BV planned opening (i.e., scheduled maintenance, production adjustments, burden adjustments);
   d. Evaluate and record operationally acceptable ranges of top pressure and hot blast pressure such that visible emissions performance is optimized during BV planned opening without incurring adverse effects on safety and furnace operations. The facility will determine what it deems adverse effects and operationally acceptable.
   e. Perform visible emission (VE) readings according to Method 9, 22, or EPA Alternative Method 082 (DOCS[1]) protocol during all BV planned openings (regardless of duration) that occur Monday through Friday 7:00 am – 3:00 pm, excluding holidays. The facility should begin VE readings at least 15 minutes in advance of the initiation of the BV planned opening.
   f. The facility shall commence the visible emission observations upon opening of the BV and continue such observations for at least 10 minutes. At the end of the ten-minute period, if there are visible emissions greater than 10 percent in a six-minute average, the facility shall continue to take the observations for at least one hour or until visible emissions are less than or equal to 10 percent for three continuous minutes.

2. As part of the recordkeeping for the PSOPL, the facility also should state its findings and conclusions, including, but not limited to, the items outlined below:

   a. Detailed description of process variables that could have a material impact on opacity from bleeders during BV planned openings, including, the blast pressure at which the bleeders open, the period between ceasing fuel input and opening the bleeders, and the period between opening the bleeders and isolating the stoves/blast; and
   b. Detailed description of the operationally acceptable ranges of top pressure and hot blast pressure such that visible emission performance is reduced to the greatest extent practicable. The facility should state with specificity the basis for the lowest pressure in the operationally acceptable range and why an even lower pressure is not operationally acceptable.

(continued)

[1] Digital opacity camera system (DOCS).

c. In the event that a 10 percent, 6-minute average opacity is exceeded, facilities should submit a compliance demonstration report that includes the information stated above and results of all VE readings. On the occasion of the third BV planned opening that results in visible emissions greater than 10 percent in a six-minute average, the facility is required to use the DOCS prior to any BV planned opening, during the planned opening, and to continue until opacity is less than or equal to 10 percent in a six-minute average. On the occasion of the fifth BV planned opening that results in visible emissions greater than 10 percent in a six-minute average, the facility shall install a DOCS in the area of the BV for 24-hour observations for a 6-month period. At the end of this period, if no exceedances of the 10 percent six-minute averages occur, the DOCS can be removed.

APPENDIX G:
PHOTOS OF WIND FENCES FOR SLAG PIT DUST CONTROL

The following are photographs of wind fences in various applications for dust control from one vendor of wind fences. http://dustcontroltech.com/products/industrial-wind-fences

APPENDIX H:
COST FACTORS AND ESTIMATES FOR NONPOINT SOURCES

Table H-1. Summary of Annualized Capital & Annual Operating Costs for Nonpoint Work Practices at One Unit[a]

Cost Item[b]	Nonpoint Source									Comments[f]
	Unplanned Openings[c]	Planned Openings	Bell Leaks		BF Casthouse	BOP Shop	Beaching		Slag[e]	
			Small	Large			Enclosure[d]	Fume Control		
Capital Costs										
Total Capital Investment (TCI)	$169,958	$0	$56,277	$225,110	$45,022	$45,022	$0	$0	$56,277	
Capital Recovery Factor (CRF)	0.094393	NA	2.104408	0.070081	0.094393	0.094393	NA	NA	0.094393	[(IN*(1+IN)^LIF)/((1+IN)^LIF-1)]*TCI,[g] 7% interest (IN)[h]
Total Capital Recovery (TCR)	$16,043	$0	$118,431	$15,776	$4,250	$4,250	$0	$0	$5,312	TCI*CRF
Administrative charges (ADM)	$3,399	$0	$1,126	$4,502	$900	$900	$883	$0	$1,126	2%*TCI.
Property taxes (TAX)	$1,700	$0	$563	$2,251	$450	$450	$442	$0	$563	1%*TCI
Insurance (INS)	$1,700	$0	$563	$2,251	$450	$450	$442	$0	$563	1%*TCI
Annualized Capital Cost, $/yr	$22,841	$0	$120,682	$24,780	$6,051	$6,051	$1,766	$0	$7,563	TCR+ADM+TAX+INS
Operating Costs										
Control device specific costs	NA	NA	NA	NA	NA	NA	NA	$1,066	$4,145	
Consulting Costs, $/yr.	NA	NA	NA	NA	$33,766	$33,766	NA	NA	NA	
Total Annual O&M Cost, $/yr[a]	$0	$0	$0	$0	$33,766	$33,766	$0	$1,066	$4,145	Control device + consulting.
Total Annualized Capital Costs, $/yr	**$22,841.12**	**$0.00**	**$120,681.74**	**$24,780.24**	**$39,817.08**	**$39,817.08**	**$1,961.84**	**$1,065.99**	**$11,708.68**	Annualized capital + Annual O&M
			$145,461.98				**$3,027.83**			

[a] NA = Not applicable.
[b] No maintenance (or overhead), electricity, or waste disposal are needed and, therefore, are not shown.
[c] Raw material screens were estimated to have a capital cost of $1,000 based on engineering judgement with a low confidence level.
[d] Administrative costs, taxes, and insurance for beaching enclosure built from on-site materials are based on costs for a purchased unit.
[e] Assuming a dry fog system would be installed for facilities that currently exceed the proposed opacity limit.
[f] Cost procedures from EPA Cost Manual at https://www.epa.gov/sites/production/files/2017-12/documents/epaccmcostestimationmethodchapter_7thedition_2017.pdf
[g] Small bell seals were estimated to last 6 months, and dry fog systems were estimated to last 20 years. See the memo *Cost Estimates and Other Impacts for the Integrated Iron and Steel Risk and Technology Review* (EPA, 2019b) for the lifetime (LIF) of capital investment for other UFIP sources.
[h] Interest rate taken from https://fred.stlouisfed.org/series/PRIME. December 7, 2022.

Table H-2. Labor Costs for Nonpoint Source Work Practices for One Unit

Nonpoint Sources	Labor for Nonpoint Work Practices at One Unit						Total Labor	
	Steel Worker		Environmental Worker		Manager			
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
BF Unplanned Openings	10	$619	10	$732	8	$1,142	28	$2,493
BF Planned Openings	26	$1,609	26	$1,904	4	$571	56	$4,084
BF Bell Leaks	6	$371	6	$439	4	$571	16	$1,382
BF Casthouse Fugitives	24	$1,485	24	$1,758	4	$571	52	$3,814
BOP Shop Fugitives	34	$2,103	34	$2,490	8	$1,142	76	$5,736
BF Beaching	4	$247	4	$293	4	$571	12	$1,112
Slag Handling	84	$5,197	84	$6,153	4	$571	172	$11,921
Total Cost ($)	**188**	**$11,631**	**188**	**$13,771**	**36**	**$5,140**	**412**	**$30,541**

Note: Labor rates from "BLS National Occupational Employment and Wage Estimates," at link below, with 110 percent markup to produce "loaded" wages. https://www.bls.gov/oes/current/oes_nat.htm. See Wage Rate table.

Table H-3. II&S Industry Units per Facility for which Work Practices Apply (from 2022 II&S Section 114 Collection)

Facility	Number of Emission Units for which Work Practices Apply						
	BF Unplanned Openings	BF Planned Openings	Bell Leaks	BF Casthouse Fugitives	BOPF Shop Fugitives	Beaching of Iron from BFs	Slag Handling and Storage
CC-BurnsHarbor-IN	2	2	2	2	1	2	2
CC-Cleveland-OH	2	2	1[a]	2	2	0[b]	2
CC-Dearborn-MI	1	1	0[a]	1	1	1	1
CC-IndianaHarbor-IN	3	3	2[a]	3	2	3	3
CC-Middletown-OH	1	1	1	1	1	1	1
USS-Braddock-PA	2	2	2	2	1	2	2
USS-Gary-IN	4	4	0[c]	4	2	4	3[d]
USS-GraniteCity-IL	2	2	1[a]	2	1	2	2
Total for II&S Industry	**17**	**17**	**9**	**17**	**11**	**15**	**16**

[a] Facility has one BF with a bell-less top.
[b] CC-Cleveland-OH does not conduct beaching.
[c] USS-Gary-IN has two BF with bell-less tops, two BF without replaceable seals, and already conducts visual emission inspections of bells every 2 weeks.
[d] USS-Gary-IN has a granulator instead of a slag pit for one BF.

Table H-4. Total Annual Emission Unit Costs for Work Practices at II&S Nonpoint Sources

Nonpoint Source	Emission Unit Costs			
	Annual Labor	Capital	Annual Operating and Annualized Capital	Total Annual
BF Unplanned Openings	$2,493	$169,958	$22,841	$25,334
BF Planned Openings	$4,084	$0	$0	$4,084
BF Bell Leaks	$1,382	$281,387	$145,462	$146,844
BF Casthouse	$3,814	$45,022	$39,817	$43,631
BOPF Shop	$5,736	$45,022	$39,817	$45,553
BF Iron Beaching	$1,112	$0	$3,028	$4,139
Slag Handling & Storage	$11,921	$56,277	$11,709	$23,629
Total Emission Unit Costs	**$30,541**	**$597,666**	**$262,674**	**$293,215**

Table H-5. Total Costs for Work Practices at II&S Nonpoint Sources by Facility

CC-BurnsHarbor-IN				
Source	**Equipment Costs$**		**Labor**	**Overall Annual Costs**
	Capital	**Annualized**		
BF Unplanned Openings	$225,110[a]	$30,253	$4,987	$35,240
BF Planned Openings	$0	$0	$8,168	$8,168
BF Bell Leaks	$450,219[b]	$49,457	$2,764	$52,221
BF Casthouse	$90,044	$79,634	$7,628	$87,262
BOPF Shop	$45,022	$39,817	$5,736	$45,553
BF Iron Beaching	$0	$3,924[c]	$2,223	$6,147
Slag Handling & Storage	$0[d]	$0	$23,841	$23,841
Total Costs	**$810,395**	**$203,085**	**$55,347**	**$258,432**

[a] Facility already has at least one stockline detector per furnace and performs raw material screening.
[b] Facility already replaces small bell seals every 6 months.
[c] Facility already uses fume suppressants.
[d] Facility already has a dry fog system.

CC-Cleveland-OH				
Source	**Equipment Costs$**		**Labor**	**Overall Annual Costs**
	Capital	**Annualized**		
BF Unplanned Openings	$2,251[a]	$303	$4,987	$5,289
BF Planned Openings	$0	$0	$8,168	$8,168
BF Bell Leaks	$281,387	$145,462	$1,271[b]	$146,733
BF Casthouse	$90,044	$79,634	$7,628	$87,262
BOPF Shop	$90,044	$79,634	$11,472	$91,106
BF Iron Beaching	$0	$0	$0	$0
Slag Handling & Storage	$112,555	$23,417	$23,841	$32,132
Total Costs	**$576,281**	**$328,450**	**$57,367**	**$385,818**

[a] Facility already has three stockline monitors on each furnace.
[b] Facility already has an operating plan for BF bell leaks.

CC-Dearborn-MI				
Source	**Equipment Costs$**		**Labor**	**Overall Annual Costs**
	Capital	**Annualized**		
BF Unplanned Openings	$56,277[a]	$7,563	$2,493	$10,057
BF Planned Openings	$0	$0	$3,553[b]	$3,553
BF Bell Leaks	$0	$0	$0	$0
BF Casthouse	$45,022	$39,817	$3,814	$43,631
BOPF Shop	$45,022	$39,817	$5,736	$45,553
BF Iron Beaching	$0	$1,962[c]	$1,112	$3,073
Slag Handling & Storage	$0[d]	$0	$11,921	$11,921
Total Costs	**$146,321**	**$89,159**	**$28,629**	**$117,788**

[a] Facility already has at least two stockline detectors per furnace and performs raw material screening.
[b] Facility already conducts quarterly emissions testing.
[c] Facility already uses fume suppressants.
[d] Facility already meets the 5% opacity limit.

CC-IndianaHarbor-IN				
Source	**Equipment Costs$**		**Labor**	**Overall Annual Costs**
	Capital	**Annualized**		
BF Unplanned Openings	$172,209[a]	$23,144	$7,480	$30,624
BF Planned Openings	$0	$0	$12,252	$12,252
BF Bell Leaks	$562,774	$290,924	$2,764	$293,688
BF Casthouse	$135,066	$119,451	$11,442	$130,893
BOPF Shop	$90,044	$79,634	$11,472	$91,106
BF Iron Beaching	$0	$9,083	$3,335	$12,418
Slag Handling & Storage	$168,832	$35,126	$35,762	$70,888
Total Costs	**$1,128,925**	**$557,363**	**$84,507**	**$641,869**

[a] Facility already has at least two stockline detectors per furnace.

CC-Middletown-OH				
Source	**Equipment Costs$**		**Labor**	**Overall Annual Costs**
	Capital	**Annualized**		
BF Unplanned Openings	$112,555[a]	$15,127	$2,493	$17,620
BF Planned Openings	$0	$0	$2,042[b]	$2,042
BF Bell Leaks	$0[c]	$0	$1,382	$1,382
BF Casthouse	$45,022	$39,817	$3,814	$43,631
BOPF Shop	$45,022	$39,817	$5,736	$45,553
BF Iron Beaching	$0	$3,028	$1,112	$4,139
Slag Handling & Storage	$56,277	$11,709	$11,921	$23,629
Total Costs	**$258,876**	**$109,497**	**$28,499**	**$137,997**

[a] Facility already has at least one stockline detector and performs raw material screening.
[b] Facility already has an operating plan for BF planned openings.
[c] Facility already replaces the small bell seal every 8 weeks. The large bell does not have a seal.

USS-Braddock-PA				
Source	**Equipment Costs$**		**Labor**	**Overall Annual Costs**
	Capital	**Annualized**		
BF Unplanned Openings	$225,110[a]	$30,253	$4,987	$35,240
BF Planned Openings	$0	$0	$8,168	$8,168
BF Bell Leaks	$562,774	$290,924	$2,764	$293,688
BF Casthouse	$90,044	$79,634	$7,628	$87,262
BOPF Shop	$45,022	$39,817	$4,704[b]	$44,521
BF Iron Beaching	$0	$6,056	$2,223	$8,279
Slag Handling & Storage	$112,555	$23,417	$23,841	$47,259
Total Costs	**$1,035,504**	**$470,101**	**$54,314**	**$524,416**

[a] Facility already has one stockline monitors per furnace and performs raw material screening.
[b] Facility already has an operating plan for BOPF shops.

USS-Gary-IN				
Source	**Equipment Costs$**		**Labor**	**Overall Annual Costs**
	Capital	**Annualized**		
BF Unplanned Openings	$450,219[a]	$60,506	$9,973	$70,480
BF Planned Openings	$0	$0	$8,168[b]	$8,168
BF Bell Leaks	$0	$0	$0	$0
BF Casthouse	$180,088	$159,268	$14,035[c]	$173,303
BOPF Shop	$90,044	$79,634	$9,407[d]	$89,041
BF Iron Beaching	$0	$7,847[e]	$4,446	$12,294
Slag Handling & Storage	$0[f]	$0	$35,762	$35,762
Total Costs	**$720,351**	**$307,256**	**$81,792**	**$389,048**

[a] Facility already has at least one stockline detector per furnace and performs raw material screening.
[b] Facility already has an operating plan for BF planned openings.
[c] Facility already has an operating plan for BF casthouses.
[d] Facility already has an operating plan for BOPF shops.
[e] Facility already uses fume suppressants.
[f] Facility already meets the 5% opacity limit.

USS-GraniteCity-IL				
Source	**Equipment Costs$**		**Labor**	**Overall Annual Costs**
	Capital	**Annualized**		
BF Unplanned Openings	$225,110[a]	$30,253	$4,987	$35,240
BF Planned Openings	$0	$0	$4,084[b]	$4,084
BF Bell Leaks	$281,387	$145,462	$1,382	$146,844
BF Casthouse	$90,044	$79,634	$7,017[c]	$86,652
BOPF Shop	$45,022	$39,817	$4,704[d]	$44,521
BF Iron Beaching	$0	$6,056	$2,223	$8,279
Slag Handling & Storage	$112,555	$23,417	$23,841	$47,259
Total Costs	**$754,117**	**$324,639**	**$48,238**	**$372,878**

[a] Facility already has one stockline detector per furnace and performs raw material screening.
[b] Facility already has an operating plan for BF planned openings.
[c] Facility already has an operating plan for BF casthouses.
[d] Facility already has an operating plan for BOPF shops.

Table H-6. Reduction Cost Effectiveness for Work Practices at Nonpoint Sources by Facility

Nonpoint Source	% Reduction	Total Annual Costs	
		PM ($/ton removed)	HAP ($/ton removed)
CC-BurnsHarbor-IN			
BF Unplanned Openings	15%	$36,553	$987,915
BF Planned Openings	50%	$1,218	$32,932
BF Bell Leaks	25%	$428	$11,559
BF Casthouse Fugitives	0%	--	--
BOPF Shop Fugitives	22%	$319	$9,966
BF Iron Beaching	0%	--	--
Slag Handling & Storage	0%	--	--
All UFIP Sources		**$948**	**$27,574**
CC-Cleveland-OH			
BF Unplanned Openings	40%	$1,486	$40,159
BF Planned Openings	0%	--	--
BF Bell Leaks	50%	$1,433	$38,720
BF Casthouse Fugitives	0%	--	--
BOPF Shop Fugitives	19%	$1,238	$38,688
BF Iron Beaching	50%	N/A	N/A
Slag Handling & Storage	25%	$1,722	$50,641
All UFIP Sources		**$1,864**	**$53,515**

Nonpoint Source	% Reduction	Total Annual Costs	
		PM ($/ton removed)	HAP ($/ton removed)
CC-Dearborn-MI			
BF Unplanned Openings	15%	$20,863	$563,857
BF Planned Openings	50%	$2,606	$70,443
BF Bell Leaks	--	--	--
BF Casthouse Fugitives	0%	--	--
BOPF Shop Fugitives	19%	$697	$21,781
BF Iron Beaching	0%	--	--
Slag Handling & Storage	25%	$549	$16,138
All UFIP Sources		**$1,325**	**$40,639**
CC-IndianaHarbor-IN			
BF Unplanned Openings	40%	$8,603	$232,512
BF Planned Openings	4%	$77,418	$2,092,390
BF Bell Leaks	46%	$2,523	$68,190
BF Casthouse Fugitives	0%	--	--
BOPF Shop Fugitives	22%	$646	$20,193
BF Iron Beaching	25%	$497,973	$13,458,724
Slag Handling & Storage	25%	$1,650	$48,536
All UFIP Sources		**$2,111**	**$61,613**
CC-Middletown-OH			
BF Unplanned Openings	20%	$25,456	$688,012
BF Planned Openings	42%	$39,700	$1,072,982
BF Bell Leaks	25%	$22	$607
BF Casthouse Fugitives	0%	--	--
BOPF Shop Fugitives	22%	$1,706	$53,310
BF Iron Beaching	50%	$124,493	$3,364,681
Slag Handling & Storage	50%	$493	$14,510
All UFIP Sources		**$1,008**	**$28,813**

Nonpoint Source	% Reduction	Total Annual Costs	
		PM ($/ton removed)	HAP ($/ton removed)
USS-Braddock-PA			
BF Unplanned Openings	15%	$36,553	$987,915
BF Planned Openings	50%	$5,313	$143,584
BF Bell Leaks	50%	$1,604	$43,349
BF Casthouse Fugitives	0%	--	--
BOPF Shop Fugitives	22%	$523	$16,350
BF Iron Beaching	13%	$796,756	$21,533,959
Slag Handling & Storage	25%	$3,691	$108,547
All UFIP Sources		**$1,850**	**$52,304**
USS-Gary-IN			
BF Unplanned Openings	15%	$36,553	$987,915
BF Planned Openings	0%	--	--
BF Bell Leaks	50%	$0	$0
BF Casthouse Fugitives	0%	--	--
BOPF Shop Fugitives	22%	$477	$14,913
BF Iron Beaching	0%	--	--
Slag Handling & Storage	25%	$832	$24,479
All UFIP Sources		**$992**	**$28,923**
USS-GraniteCity-IL			
BF Unplanned Openings	20%	$25,456	$688,012
BF Planned Openings	23%	$3,491	$94,344
BF Bell Leaks	50%	$1,733	$46,843
BF Casthouse Fugitives	0%	--	--
BOPF Shop Fugitives	19%	$638	$19,946
BF Iron Beaching	25%	$331,982	$8,972,483
Slag Handling & Storage	25%	$2,316	$68,113
All UFIP Sources		**$2,101**	**$60,570**

Exhibit F – Summary of Public Comments and Responses for Amendments to the NESHAP for Integrated Iron and Steel Manufacturing Facilities, Response to Comments, EPA-HQ-OAR-2002-0083-1976) (“RtC”)

Summary of Public Comments and Responses for Amendments to the NESHAP for Integrated Iron and Steel Manufacturing Facilities

Commenter ID	Commenter Name
1489	Matthew Deinhardt
1490	Anonymous public comment
1491	Dominic Yanke
1492	Cheryl Chapman
1493	Edith Abeyta
1494	Ohio Manufacturers' Association (OMA)
1495	Jeffrey A. Langbehn
1496	Marilyn Wall
1497	Ohio Manufacturers' Association's (OMA)
1500	ME Global / ME Elecmetal North America
1501	National Tribal Air Association (NTAA)
1513	Advanced Integration Group, Inc. (AIG)
1514	Graymont
1517	David Green
1518	Coyanosa Gas Services Corporation
1522	Eagle Services Corporation
1523	Lyons Industries, Inc.
1530	Edge Lumber Company, Inc.
1531	Glunt Industries, Inc.
1532	United States Steel Corporation (USS)
1533	J.P. Graham Transport, Inc.
1545	Seven Lakeway Refractories, LLC.
1550	Robert Schloss
1562	National Tribal Air Association (NTAA)
1563	Pennsylvania House of Representatives Frank Burns
1569	Higgins Industrial Supply
1572	State of Pennsylvania Representatives Eric Nelson and Jim Rigby
1573	Mesabi Radial Tire Company
1575	The CREATE Lab, Carnegie Mellon University
1577	Mass Comment Campaign sponsored by U. S. Steel Gary Works. (web)
1578	Mass Comment Campaign sponsored by U. S. Steel Gary Works. (web)
1579	Representative Andrew Kuzma, 39 Legislative District, Commonwealth of Pennsylvania
1580	Women for a Healthy Environment
1581	Senator Camera Bartolotta, 46th Senatorial District, State of Pennsylvania
1582	Representative Jim Marshall, 14th Legislative District, State of Pennsylvania
1583	Representative Valerie S. Gaydos, 44th Legislative District, State of Pennsylvania
1586	Mindy Buccicone
1587	International Union of Painters and Allied Trades (UPAT), District Council 57 of Western Pennsylvania

Commenter ID	Commenter Name
1588	Pasquace Graccuzzo
1589	United States Steel Corporation
1590	Steel Manufacturers Association (SMA)
1591	United States Steel Corporation
1592	Donna Ballinger and Marilyn Wall
1593	Representative Matthew Gergely, 35th District, House of Representative, Pennsylvania
1594	Environmental Integrity Project (EIP) et al.
1595	United Steelworkers (USW)
1596	Environmental Law & Policy Center (ELPC)
1597	National Slag Association (NSA)
1598	Clean Water Action
1604	American Lung Association er al.
1627	Earthjustice et al.
1631	AISI and US Steel
1632	Nathan Lee
1634	Pickands Mather (PM)
1637	Corsa Coal Corp.
1638	Paul Zimmer
1639	Alycia Nicholas
1641	Northern Engine & Supply Co.
1642	General Equipment & Supplies, Inc.
1644	Downriver Refrigeration Supply Co.
1645	United States Steel Corporation (USS)
1646	Bearings & Power Transmission, Inc.
1649	DSS Valves
1651	Edwards Oil and Propane
1652	Beelman Logistics, LLC
1653	Mesabi Radial Tire Company
1656	Paul Jasinski
1658	Loretta Pozega Thompson
1659	Todd Gutmann
1660	Robert Essman
1661	Glen Anderson
1662	Kay Merica
1663	CATHERINE PENNA
1664	Brandon Menke
1665	Walter Mintkeski
1666	Tracey Bonner
1667	Sue Stoudemire
1668	Derek Shendell
1669	M. Dulin

Commenter ID	Commenter Name
1670	Freda Hofland
1671	Ken Kurtz
1672	Dr. Demian
1673	Bruce Hlodnicki
1674	Karen Povlock
1675	Lorraine Wilson
1676	Miriam Johnson
1677	Christopher Hamilton
1678	Edward and Beatrice Simpson
1679	Frances Walker
1680	Carol Wong
1681	Paul Schmalzer
1682	Jon Esty
1683	Breathe Project
1684	Mass Comment Campaign sponsoring organization unknown. (web)
1685	Mass Comment Campaign sponsoring organization unknown. (email)
1686	Mass Comment Campaign sponsoring organization unknown. (email)
1687	Mass Comment Campaign sponsoring organization unknown. (email)
1689	Nicholas Rattner
1690	Charlotte Doyle
1691	Jennifer Moore
1692	Elizabeth Anne Smith
1693	Emma Tufano
1694	Phyllis O'Daniels
1695	Kara Masters
1696	Harold Brown
1697	Edward Costello
1698	Anna Rossi
1699	Robert Raymond
1700	Susan Maurer
1701	Peter Macfarlane
1702	Tim Laidman
1703	Juliet Waldron
1704	Jan Schiller
1705	Lucy Stroock
1706	Thomas Cassidy
1707	Rosann Lynch
1708	A.J.S. Rayl
1709	Barb Fuoco
1710	Lori Jirak
1711	Elaine Weibel
1712	Gay Mikelson

Commenter ID	Commenter Name
1713	Sue Stoudemire
1714	Bruce Hlodnicki
1715	Deborah Bayer
1716	Erin Moore
1717	Maggie Boys
1718	Fred Davis
1719	Environmental Law & Policy Center (ELPC)
1720	National Association of Manufacturers (NAM)
1721	Group Against Smog and Pollution
1722	Environmental Integrity Project (EIP) et al.
1723	Representative Matthew Gergely, 35th District, Pennsylvania House of Representative
1724	Sierra Club et al.
1725	AISI and United States Steel Corporation
1726	Daren Black
1727	Juli Kring
1728	Amanda Hawkins
1729	Sandra Aseltine
1730	Paula De Manuel
1731	Tim Laidman
1732	K Danowski
1733	Daniela Gioseffi
1734	Douglas Kinney
1735	Jackie Cash-Rolland
1736	Jean Naples
1737	Lisa Trimboli
1738	Andrew Ashburn
1739	Virginia Lee
1740	Rose Bohmann
1741	Rebecca Acuna
1742	Russell Freeland
1743	Barry Fass-Holmes
1744	Catherine Carter
1745	Buck Schall
1746	Paul Franzmann
1747	Sebastian Moya
1748	Regula Hess
1749	Brendon Bass
1750	Perry Kendall
1751	Laura Manz
1752	Marybeth Webster
1753	Kate Considine

Commenter ID	Commenter Name
1754	Gilberto Lopez
1755	Rich Elam
1756	Carol Wong
1757	Kay Hudson
1758	Alexandra Chappell
1759	Charlotte Smith
1760	Peter Hapke
1761	Sharon Tkacz
1762	ML Menikheim
1763	Shan Albert
1764	Christina Ciano
1765	Anne Randolph
1766	Bob Bartlett
1767	Glen Anderson
1768	Mary Hirose
1769	Nicole Carpentier
1770	Michael Wherley
1771	Jeanine Davis
1772	Lee Nicoloff
1773	Thomas Hazelleaf
1774	Stewart Wilber
1775	Linda Agerbak
1776	John Corso
1777	Edward and Beatrice Simpson
1778	Kathleen Smith
1779	Diana Nasser
1780	William Steele
1781	Jill Seiden
1782	Virginia Lee
1783	Matthias Hess
1784	Robert Lord
1785	Richard Spotts
1786	K.G.H. Nicholes
1787	Cyn Roberts
1788	Pamela A. Lowry
1789	Kathy Kahn
1790	Thomas Proett
1791	Ken Kurtz
1792	Erin D'Alessandro
1793	Margaret Barrett
1794	Elaine Wolf
1795	Carrie Anderson

Commenter ID	Commenter Name
1796	Brenda Frey
1797	Dan and Mrs. Janet Blair
1798	Craig Nazor
1799	Frances Walker
1800	Susan Scherkenbach
1801	Kris Akione
1802	Patrick Growe
1803	Mona Perrotti
1804	Delia Shertz
1805	Margo Krindel
1806	Nancy Garret
1807	Paula Morrow
1808	Dwight Johnson
1809	Cathy Brandt
1810	Juli Kring
1811	James Marsden
1812	Linda Schneider
1813	Leslie Edwards
1814	Alice Romejko
1815	Dana Lubin
1818	Dr. Amy Eisenberg
1819	Elizabeth Edinger
1820	Jacalyn Johnson
1821	Michael Terry
1822	Sheri Kuticka
1823	Carole Cool
1824	Ervin Kelman
1825	Christine Graziano
1826	Patricia Kadar
1827	James Boone
1828	B.S.
1829	Rat Wrangler
1830	Karen Wilson
1831	Kae Bender
1832	Lois Johnston
1833	James De Vry
1834	Austin Hollis
1835	Jim Steitz
1836	Suzan Fleischman
1837	Carl B. and Pamela S Lechner
1838	Margaret Reitz
1839	Annie Houston

Commenter ID	Commenter Name
1840	Abigail Holmes
1841	Judith Books
1842	Gerald Oborn
1843	M. Moderacki
1844	Kari Pohl
1845	Lisa Wentland
1846	Ralph Myer
1847	Frances Tony
1848	Evan Elias
1849	Liz Szabo
1850	Tom Evnsa
1851	Donna Ramer
1852	Diana keyser
1853	Anonymous public comment
1854	Dawn R. Casper
1855	Amrita Burdick
1856	Dede Christopher
1857	Frances Tony
1858	Christopher Ward
1859	T S
1860	Paula Rotondi
1861	Christine Wells
1862	Anonymous public comment
1863	Brenda Bell
1864	Ben Jones
1865	Lloyd Williams
1866	Henry Hall
1867	David Pedersen
1868	Melinda Mueller
1869	Janice Gintzler
1870	Justina Cotter
1871	Nancy Pierpont
1872	Jennifer Hiebert
1873	Anonymous public comment
1874	Kate Siegel
1875	Cathy Brandt
1876	Kimberly Hunt
1877	K. K. (no surname provided)
1878	Ms. Salof (no foreman provided)
1879	Rosemary Kean
1880	Carolyn McCall
1881	James Love

Commenter ID	Commenter Name
1882	Ellen Campbell
1883	Karen Brickey
1884	Stephen Lane
1885	Lucas Lund
1886	David Esopi
1887	Heather Saul
1888	David R. Fair Sr.
1889	Gerald Gionet
1890	Kathleen Austin
1891	Sharon G. Ross
1892	Linda Alvarez
1893	Luke Farrell
1894	Rae Ma
1895	Jan Lapides
1896	Susan Wiget
1897	Cheryl Mitchell
1898	Todd Cochran
1899	Indiana Environmental Clean Energy J40, Inc.
1900	Meghan Jones
1901	Liz Szabo
1902	Patricia Massa
1903	Anonymous public comment
1904	Marcie Long
1905	Rose Ann Witt
1906	Christopher Lish
1907	George Milkowski
1908	Kathaleen Parker
1909	Louis Goldstein
1910	Anonymous public comment
1911	Anonymous public comment
1912	Anonymous public comment
1913	Rebecca Brazaitis
1914	Anonymous public comment
1915	Madison Jones
1916	Anonymous public comment
1917	Anonymous public comment
1918	Anonymous public comment
1919	Anonymous public comment
1920	Judy Schultz
1921	Brad Snyder
1922	Ethan Frank
1923	Bethany Narajka

Commenter ID	Commenter Name
1924	Ted Forbes
1925	Edmund LoPresti
1932	Industrious Labs
1934	Senator Pat Stefano, PA State Senator, District 32
mass mail	Mass Comment Campaign sponsored by U. S. Steel Gary Works. (web)
	Mass Comment Campaign sponsored by United States Steel Granite City Works. (web)
	Mass Comment Campaign sponsored by United States Steel Corporation. (email)
	Mass Comment Campaign sponsored by U. S. Steel Corporation. (paper)
	Mass Comment Campaign sponsored by U. S. Steel Mon Valley Works (email)
	Aaron Graham
	Advanced Integration Group (AIG)
	AE Control
	All Crane Rental of Pennsylvania, LLC
	Alycia Nicholas
	American Electric Control Corporation (AE Control)
	Anonymous public comment
	Arnette Pattern Company, Inc.
	Avalotis Corporation
	Bearing Service Company
	Bearings & Power Transmission, Inc.
	Beelman Logistics, LLC
	Christopher Ellefson
	Connors Industrials Inc.
	Corsa Coal Corp.
	Coyanosa Gas Services Corporation
	CTC Engineering, LLC
	David Lubert
	Downriver Refrigeration Supply Co. (DRS)
	DSS Valves
	Eagle Services Corporation
	Edge Lumber Company Inc.
	Edwards Oil and Propane
	Ellefson Off Highway
	General Equipment & Supplies, Inc.
	Glunt Industries Inc.
	Graham Corporation
	Graymont
	Gregg Richley
	Hadady Machining Co., Inc.
	Hanco LTD.

Commenter ID	Commenter Name
	Heraeus Electro-Nite Co., LLC
	Horizon Park Properties LLC
	Hy-Dac Rubber Manufacturing
	International Union of Painters and Allied Trades District Council 57 of Western Pennsylvania
	Iracore International
	J. P. Graham Transport, Inc.
	James Bugliosi
	Jim Wright
	Justin K. Holcombe
	Justin Monacelli
	Kamadulski Excavating & Grading Co., Inc.
	Laura Bianchi
	Lisa McGrath
	Lloyd E. Blaker
	Lyons Industries Inc.
	Madison Gentille
	Mars Supply and Conveyor Belt Service Inc.
	Mayer Electric
	ME Global / ME Elecmetal North America
	Mesabi Radial Tire Company
	Mindy Buccicone
	Monarch Welding & Engineering, Inc.
	Munroe Inc.
	Nathan Lee
	Nicole Williams
	Northern Engine and Supply
	Pasquale Gralluzzo
	Paul Jasinski
	Paul Zimmer
	Pickands Mather
	Pinder Polyurethane and Plastics's Inc
	Pinnacle Precision Co. Inc.
	Pro-Chem-Co. Inc.
	R. M. Manufacturing Sales and Services, Inc.
	Radiation Technology Inc.
	Reserve Marine Terminals
	Seven Lakeway Refractories
	Sherri Kotkevich
	Suppliers of U.S. Steel Corporation
	Wahl Refractory Solutions
	Williams Parts and Supply Co.

1. Background

1.1 Statutory authority

Comment 1:

[1631] Commenters stated that EPA is proposing to follow its past practice of promulgating paragraph (d)(2) standards that reduce emissions from previously unregulated existing sources (in this case, sources of UFIP emissions) to the "floor" level established for those sources, without "taking into consideration" the "cost of achieving such emission reduction" or of any of the other MACT standard setting factors identified in CAA Section 112(d)(2). Commenters state that EPA cannot take refuge in its unfounded belief that the language of CAA Section 112(d)(3) operates to preclude EPA from taking account of costs in establishing MACT standards for existing sources under CAA Section 112(d)(2). Section 112(d)(2) provides the standard-setting authority and guideposts for MACT standards, requiring the "maximum degree of reduction in emissions of the hazardous air pollutants subject to this section . . . taking into consideration the cost." By proceeding first with Section 112(d)(3) analyses for the various new pollutants in its proposal, EPA turns the contemplated standard setting on its head and ignores cost—a key consideration that Congress intended to be taken into account—but such costs have not been properly considered in the Agency's development of any of its proposed MACT standards. Commenters believe that in this proposed rulemaking, the EPA has failed to consider the incremental cost of further HAP emission reductions against the HAP-related benefits that would be achieved. Without consideration of incremental HAP benefits against incremental costs, EPA is interpreting this updating provision to allow EPA to impose requirements on industry that achieve no statutorily prescribed benefits.

[1631] Commenters stated that the EPA misreads paragraph (d)(3), in that it fails to pick up on the critically important fact that paragraph (d)(3) uses quite different language when it speaks, alternatingly, of "new sources" and of "existing sources." Paragraph (d)(2) mandates that EPA establish MACT standards for all major existing sources in the category, and that mandate can be satisfied by EPA adopting a separate floor for sources that could not achieve the categorical standard. The different language used in, and different legal effect given to, existing source and new source floors reflects the fact that new source floor-based controls are "achievable" because they can be designed into new sources whereas existing source retrofit costs may make compliance with categorical floor-based standards infeasible or unachievable for certain sources within the category. Commenters stated that the EPA's approach to setting a floor for existing UFIP sources ignores the statutory language and, instead, bases the floor on the "average [actual emission] performance" of the best performing sources. For existing sources in such circumstances, a new floor is needed in order to promulgate lawful MACT standards that will be "achievable" considering the paragraph (d)(2) decisional criteria. The commenter asserted that the EPA must withdraw what it has published and repropose a standard that is established in accordance with the provisions of CAA Section 112(d)(2). Furthermore, commenters claim that the courts have not specifically reviewed these statutory issues, and claims that the courts have

acquiesced to EPA's view that MACT Floor standards should not consider cost, and that any statements made by the courts on this issue should be treated as mere "dicta."

[1631] Commenters stated the proposed rule should be revised to align with the goals and intent of the CAA and the standard-setting provisions of section 112. Commenters argued the proposal proceeds from the EPA's longstanding, but mistaken, view that, in setting new MACT emission standards for previously unregulated sources, the Agency is free to disregard entirely the costs that those standards would impose, even though CAA section 112(d)(2) provides explicitly that the EPA must "tak[e] into consideration the cost" associated with "achieving" the "maximum degree of reduction in emissions" to determine if the standard is "achievable." Further, the EPA wrongly assumes that, in calculating so-called "floors" for existing sources under CAA section 112(d)(3), the Agency may do so on the basis of those sources' actual emissions performance, even though the statute expressly requires that existing source floors be derived from the average "emission limitation"—i.e., a source's allowable emissions, as set forth in some regulatory provision or permit term—applicable to such source. Finally, the EPA seems to mistakenly believe that, in establishing work practice standards under section 112(h), it may do so by first setting "floors" under CAA section 112(d)(3). Such an approach misreads the relevant statutory provisions.

Response 1:

EPA disagrees that the Clean Air Act allows EPA to take costs into consideration in determining MACT floors and also disagrees that judicial statements on this issue should be treated as "dicta." The D.C. Circuit has specifically reviewed the issue of whether costs should be considered when setting MACT floor standards and definitively ruled that cost should not be considered. In *Nat'l Lime Ass'n v. EPA*, 233 F.3d 625 (D.C. Cir. 2000) ("*Nat'l Lime*"), the court clearly stated that cost should only be considered when evaluating whether "beyond the floor" emission standards should be adopted:

> [Petitioner] claims that the EPA, in limiting PM emissions, failed to meet the statutory requirement to "tak[e] into consideration the cost of achieving . . . emissions reduction[s]" . . . . According to [petitioners], the per unit cost of preventing HAP metal emissions is prohibitively high. *Cost, however, may be taken into account only in considering beyond-the-floor emissions limitations*, which in the case of PM we have remanded to the agency; *cost may not influence the determination of a MACT floor*, which depends exclusively upon the emissions reductions achieved by the best-performing sources.

Id. at 640 (emphasis added).

The commenters' reading of the statute would not give effect to the language of CAA section 112(d)(3), which provides that the emission standards developed under this section "*shall* not be less stringent than" the emission performance of the best controlled similar source, for new sources; and "*shall* not be less stringent, and may be more stringent than" the emission performance of the top 12% of existing sources for categories with more than 30 sources, or the top 5 sources for categories with fewer than 30 sources, for existing sources. This language provides a clear mandate and does not indicate that EPA maintains any discretion to consider cost in determining the MACT floor; such a reading would serve only as a one-way ratchet to potentially decrease emission standard stringency. Furthermore, to the extent that the commenter

claims that cost must be considered to determine "achievability," EPA finds that those considerations are already contained within the existing process, since the MACT floor process necessarily evaluates the emission performance of *existing* sources that have found it economic to use those controls. Thus, because there are sources currently meeting certain levels of a standard of performance, then emission standards that emulate those best-performing sources are indeed "achievable." Whether certain individual sources may find it difficult to achieve those standards is a separate issue.[1]

Regarding the comment that MACT floors must be based on emission limitations, the D.C. Circuit has spoken to this issue several times, including in *Nat'l Lime* where the court stated that the MACT floor depends exclusively on the emissions reductions "achieved" by the best-performing sources rather than the standard of "achievability" that the commenter believes is mandated. In *Sierra Club v EPA*, 167 F.3d 658, 662-64 (D.C. Cir 1999), the court found that the individual emission levels set by EPA for MACT standards pursuant to CAA section 129 could not be supported because the emissions limitations that the EPA relied upon to set the numeric floor for each pollutant did not appear to reflect the actual individual pollutant emission levels being achieved by the best performing sources.[2] The court remanded the standards to the EPA to better explain how the emissions limitations represented the actual performance of the best units or to, instead, use more reliable data. Because the EPA could not explain the original use of the emission limitations, on remand, the agency used actual performance data to establish the final standards. When the D.C. Circuit reviewed EPA's approach in response to the remand, it found the Agency's use of the actual emissions data in lieu of the permit limits reasonable. *See Medical Waste Inst. v. EPA*, 645 F.3d 420 426 (D.C. Cir. 2011).. The D.C. Circuit court in *Northeast Maryland Waste Disposal Authority v. EPA* evaluated this same issue in the context of the analogous CAA section 129, determining that "actual" emissions, not a "reasonable estimate," should be utilized to develop a standard. *See* generally, 358 F.3d 936 (D.C. Cir. 2004) ("*Northeast Maryland*"). Thus, MACT standards should be based on measurements that represent the real world, not permit limits.

Further, in the same case, the D.C. Circuit squarely rejected EPA's attempt to base MACT floors on "emission limits" set forth in state permits.[3] Petitioners specifically contended that

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[1] As one commenter indicates, Judge Williams in *Sierra Club v. EPA*, 479 F.3d 875 (D.C. Cir. 2016), suggested that the problem could be rectified through subcategorization. However, in *Nat. Res. Def. Council v. EPA*, Judge Rogers explained that the source's demand for a separate source subcategory for its operations—a uniquely dirty hardboard press—was properly rejected by the EPA, and that Petitioner Louisiana-Pacific's argument that the MACT must reflect a level that all sources in a source cat can meet was incorrect. *Nat. Res. Def. Council v. EPA*, 489 F.3d 1364, 1376 (D.C. Cir. 2007) ("L-P also relies on an incorrect premise that the MACT level of emissions reduction is invalid if it is based on control technology that a source cannot install.")

[2] CAA section 129 is highly analogous to section 112 because the language found in both sections specifies that the respective "degree of reduction in emissions" cannot be less stringent than the "emissions control that is achieved in practice by the best controlled similar unit … ." *Compare* CAA §§ 129(A)(2) and 112(d)(3).

[3] Note that in *Northeast Maryland*, EPA tried to justify basing the section 129 standards on state permit "emission limitations," not through the argument currently presented by the commenter

"there is nothing in the record to demonstrate that a state permit limits … reflect 'the average emissions limitation achieved'" by the best performing units; environmental petitioners in *Northeast Maryland* claimed that it was likely that sources were overachieving beyond their permit limits, arguing that "the regulatory limits are in fact much higher than the emissions that units achieve in practice." *Id.* at 954. The court held that "[g]iven the absence of evidence that the permit levels reflect the emission levels of the best-performing [units] … we cannot uphold the MACT floors." *Id.* at 954. Thus, the court specifically held that the establishment of a section 129 MACT standard based on state permit limits (i.e., an "emission limitation")—alone and otherwise refraining from measuring "actual" emissions— was insufficient to meet the purposes of the statute. Other courts have likewise declined to impute the definition of "emission limitation" found in 302(k) to signify that EPA should ignore actual emission statistics. *See Cement Kiln Recycling Coalition v EPA*, 255 F.3d 855, 860-61 (D.C. Cir. 2001) (noting that there was "nothing in the record even hinting that the phrase 'emission limitation' must be defined by reference to 7602(k)" when interpreting section 112(d)(3)).

Regardless of how petitioners may wish to cabin EPA's statutory authorities, the use of the phrase "emission limitation" in section 112 does not restrict EPA to basing MACT standards on a rough representation of emissions, when EPA has access to real-world emissions data. Thus, while EPA acknowledges that an "emission limitation" is a defined term in the CAA, it cannot be that Congress' intent was that EPA should actively ignore emissions data in favor of an abstract "emission limitation." There is neither textual evidence nor any policy reason why EPA would be required to shun actual emissions data and turn instead to a proxy in order to set a MACT standard.

Comment 2:

[1631; 1627; 1592] Commenters state that under CAA section 112(h), the EPA must ensure that the action it takes is consistent with the scope of its authority and fundamentally aligns with congressional intent, as is reflected on the face of those statutory provisions themselves. Hard-pressed by the unreasonably abbreviated rulemaking schedule to which EPA has unfortunately agreed, the Agency has seemingly failed so far to consider whether the actions it is proposing to take are actually lawful. Commenters state that EPA's new limits for uncontrolled hazardous air pollutants are unlawful and arbitrary.

Response 2:

The EPA is required to establish standards using the information available to the Administrator. The EPA is finalizing standards under sections 112(d)(2), (d)(3), (d)(6) and 112(h) and has demonstrated how the work practice standards under 112(h) are consistent with these provisions. The commenters' criticism of the dates is not relevant to the standard-setting process, as the required statutory date for the EPA's review has passed.

Comment 3:

(*i.e.*, that 302(k) is a narrow definition that precludes utilizing "actual" emissions), but rather because "[p]ermit limits and regulatory limits provide a reasonable estimate of the actual performance []." [*Northeast Maryland*, 358 F.3d at 954].

[1631] Commenters state that the proposal to repurpose a narrow hazardous air pollutant provision to control criteria pollutants is legally impermissible. At several points in the proposal, EPA states that the benefits it believes will be generated from this action are largely due to benefits from the reduction of $PM_{2.5}$, a criteria pollutant under Section 109, not from the HAPs that are the subject of Section 112. It is improper for EPA to justify a Section 112 regulation based on benefits that it projects to occur as a result of emission reductions of criteria pollutants, which are already independently regulated and for which regulation is authorized under separate provisions of the Act. EPA cannot rely on PM2.5 benefits to give meaning to a HAP rulemaking that lacks clear HAP-related benefits.

Response 3:

It is well established that the EPA may use a surrogate emission standard under CAA section 112, such as it has here by using $PM_{2.5}$ emissions not as a criteria pollutant standard, but as a surrogate for non-Hg metal HAPs. Under the *National Lime* test, this use of $PM_{2.5}$ as a surrogate for non-Hg metal HAP is appropriate because 1) the target HAP is invariably present in the surrogate pollutant; 2) the control technology being required indiscriminately controls emissions of the non-Hg metal HAP as it controls the $PM_{2.5}$; and 3) control of the surrogate is the only means by which these sources achieve reductions in the non-metal Hg HAP. *Nat'l Lime Ass'n v EPA*, 233 F.3d 625, at 639 (D.C. Cir. 2000). Accordingly, the EPA is acting under its authority under section 112 of the CAA and not section 109, which is a mischaracterization by the commenter. HAP are emitted from these processes, and the EPA is required to establish standards for all HAP-emitting processes that are part of source categories listed under CAA section 112. EPA is not justifying the revisions to the NESHAP based on benefits from reducing emissions of $PM_{2.5}$ but rather EPA is simply providing additional information regarding the impact of the revisions to the public and regulated community.

Comment 4:

[1631; 1594] Commenters stated that CAA Section 112(d)(2) is the only section 112 provision that authorizes EPA to establish MACT numerical emission standards. Section 112(d)(3) does not itself authorize the promulgation of numerical emission standards, but, instead, provides EPA authority to identify emission floors defining the minimum stringency of any numeric standards for existing sources that may be promulgated under Section 112(d)(2). Where EPA determines that "it is not feasible" to "prescribe or enforce an emission standard for control of a hazardous air pollutant or pollutants," EPA is authorized under Section 112(h)(1) to adopt a "design, equipment, work practice or operational standard" (hereinafter, collectively "work practice standard") "in lieu" of a "numerical standard" under Section 112(d)(2), provided that the (h)(1) standard "is consistent with" (d)(2). Numerical standards under paragraph (d)(2) and (4) and paragraph (f), and work practice standards under (h)(1) are mutually exclusive.

[1631] Commenters stated that EPA has proposed paragraph (d)(3) "floors" for paragraph (h)(1) work practice standards for two previously unregulated sources of (UFIP) HAP emissions: BF unplanned bleeder valve openings and beaching from iron from BFs. EPA has also proposed work practice standards (without either citing paragraph (h)(1) or proposing a paragraph (d)(3) work practice "floor") for BF bell leaks. While the work practice standards proposed for each of

these three groups of sources of UFIP satisfy the condition specified in paragraph (h)(2) that the "application of" a "measurement methodology . . . is not practicable," EPA has failed to explain how each meets the paragraph (h)(1) "consistency" requirement, as interpreted by the D.C. Circuit in *U.S. Sugar Corp. v. EPA*, 830 F.3d 579 (D.C. Cir. 2016).

[1631] Commenters stated that EPA must publish a supplemental proposal (1) withdrawing the (d)(3) "work practice standard" floors in the current proposal; (2) soliciting comment on application of the (d)(2) statutory factors to those proposed work practice standards; and (3) explaining how compliance with those standards would be cost effective, and feasible, for all sources subject to the standard.

Response 4:

Sections 112(d)(2) and (3) allow the EPA to establish MACT numerical standards for new and existing sources; they direct the EPA to consider the application of measures, processes, methods, systems, or techniques, including, but not limited to, those that reduce the volume of or eliminate HAP emissions through process changes, substitution of materials, or other modifications; enclose systems or processes to eliminate emissions; collect, capture, or treat HAP when released from a process, stack, storage, or fugitive emissions point; are design, equipment, work practice, or operational standards; *or any combination of the above*. The MACT standards may take the form of design, equipment, work practice or operational standards where the Administrator determines that either (1) a pollutant cannot be emitted through a conveyance designed and constructed to emit or capture the pollutant, or that any requirement for, or use of, such a conveyance would be inconsistent with law; or (2) the application of measurement methodology to a particular class of sources is not practicable due to technological and economic limitations. CAA sections 112(h)(1) & (2).

Contrary to the commenter's suggestion that section 112(d)(2) only permits the EPA to promulgate numerical emission standards, section 112(h)(4) expressly provides that, "[a]ny [work practice] standard promulgated under paragraph (1) shall be promulgated in terms of an emission standard whenever it is feasible to promulgate and enforce a standard in such terms."

While the preference under CAA section 112(d)(2) is to promulgate a numeric emission standard, it is not always feasible to do so, which is when work practice standards may be appropriate under section 112(h). CAA section 112(h) does not refer back exclusively to CAA section 112(d)(2) as the commenter claims, but instead provides that work practices be established in a manner "which in the Administrator's judgment is consistent with the provisions of subsection (d) or (f)." This phrase refers back to section 112(d) in its entirety and is not limited to 112(d)(2). Thus, the EPA has concluded that the work practice standards for the previously unregulated fugitive processes have been established under the correct statutory authority and, therefore, disagrees with the comments suggesting that a supplemental proposal must be issued based on use of the CAA section 112(d)(2) authority.

Regarding the comment that the EPA failed to explain how the proposed work practice standards meet the paragraph (h)(1) "consistency" requirement, the inability to quantify the fugitive emissions, which serves as the basis for the establishment of work practice standards, precludes definitive calculations of numerical MACT floors (based on the best performing 12 percent of sources). The EPA has consistently taken the position that::EPA

> may exercise its discretion to create a work practice standard . . . under section 7412 pursuant to the specific authority and conditions set forth in section 7412(h). Under that provision, if EPA determines that it is "not feasible" to prescribe or enforce a numeric MACT standard, it may instead promulgate a non-numeric work practice standard. Although this decision is wholly within the Administrator's discretion, that discretion may not even be exercised unless the statutory definition of infeasibility is met. 42 U.S.C. § 7412(h)(2)(A), (B). Thus, EPA's authority to create work practice standards in lieu of numeric standards under section 7412 was expressly granted by Congress—with conditions.

Br. for Resp., *American Forest & Paper Ass'n, et al. v. EPA*, 2015 WL 995053, at *47.

In this action, EPA appropriately identified the types of qualitative measures that are used by the sources that EPA has determined are the "best performing sources," and developed the work practice standards in accordance with those qualitative measures to require a reduction of those fugitive emissions.

Comment 5:

[1631] Commenters stated that the proposed Section 112(d)(6)-based revisions to the existing emission standards for BOPF shop and BF casthouse fugitive emissions are not required by statute or by the *LEAN* decision, and are otherwise unwarranted, inappropriate, and flawed. *LEAN* does not require EPA to revise the Section 112(d)(6) technology review already completed because there is no "gap" to fill for BOPF shop and BF casthouse fugitives. The commenter said it appears that the decision to conduct any *LEAN*-based revisions to the rule based on a negotiated schedule with litigants has resulted in a separate decision to make all changes to the regulations that might be contemplated in one single action. While the efficiency of conducting one rulemaking instead of two has some facial appeal, such efficiencies cannot be achieved at the expense of a complete and accurate analysis, which has been sacrificed here, given the unreasonableness of the schedule to accomplish not only the *LEAN* aspects of the proposal but also the discretionary ones. For this reason, EPA should disconnect the two parts of this proposed regulation and only proceed on the court schedule for those aspects that are actually compelled by *LEAN*. The commenter also stated that Section 112(d)(6) does not support the proposal to tighten opacity limits for BOPF shops and BF casthouse fugitives and new work practice standards for BOPF shops. The EPA cites to some "significant" uncertainties that it had in 2020 being resolved now (2023 Proposal) —without providing evidence of any such resolutions—and in fact, to the extent uncertainties existed in 2020, they remain today.

Response 5:

We agree that the revised standards for the BOPF and BF are not required under the *LEAN* decision. However, we disagree with the comments regarding CAA section 112(d)(6). We conclude that it is appropriate to finalize work practice standards for the BOPF Shop pursuant to CAA section 112(d)(6) based on our evaluation of the data and related information (as described in the technical memorandum cited above). We conclude that these work practices are feasible, effective and relatively low-cost and therefore reflect a development in practices, processes, or technologies pursuant to CAA section 112(d)(6) and that it is appropriate to add these work

practice standards to the NESHAP at this time rather than wait for the next eight-year review. There is nothing in the court's opinion that precludes the EPA from updating standards pursuant to 112(d)(6) in the same action in which we are addressing the unregulated HAP emissions that are the subject of the *LEAN* decision.

Comment 6:

Commenters stated that EPA is under no obligation to abandon the surrogate limits that it put into place for D/F and PAH, much less to do so on the rushed schedule it is pursuing. The *LEAN* decision is limited to gap-filling efforts for unregulated pollutants, obligating EPA to address unregulated emissions from a major source category when the agency conducts the eight-year technology review required by CAA Section 112(d)(6). **(***See LEAN v. EPA*, 955 F.3d 1088 (D.C. Cir. 2020).**)** EPA should withdraw, or at a minimum defer, its proposed revisions to existing standards for emission of D/F and PAH from sinter plants because they are not required under *LEAN*. These HAPs are already regulated under the existing MACT. The commenter also said that EPA should not be adding to its burden non-*LEAN* elements. Because of issues with the proposed D/F and PAH limits, they should be withdrawn and not finalized with the *LEAN*-compelled rule revisions.

Response 6:

Similar to the response to the previous comment, we agree that the revised standards for D/F and PAHs for sinter plants are not required under the *LEAN* decision. However, we disagree with the comments regarding CAA section 112(d)(6). We conclude that it is appropriate to finalize revised standards for D/F and PAHs for sinter plants pursuant to CAA section 112(d)(6) because the data we collected and analyzed support establishing pollutant specific emissions limits for D/F and PAHs to replace the use of VOC or oil content in the sinter feed as surrogates, as was the case in the NESHAP prior to the finalization of this current rule. We conclude that establishing specific limits for PAHs and D/F are improvements to the NESHAP based on the available data and reflect developments in practices, processes or technology pursuant to CAA section 112(d)(6). The data and calculation of the emissions limits are described in the following two technical documents: *Point Source Data Summary for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF* and the *Maximum Achievable Control Technology Standard Calculations, Cost Impacts, and Beyond-the-Floor Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF* which are available in the docket for this final action.

Comment 7:

[1631] Commenters stated that EPA has not met its burden of demonstrating that revision of the standards is "necessary" under Section 112(d)(6). The Agency has neither demonstrated that the new, severe restrictions will actually affect a material improvement to public health or the environment, nor that the cost of the standard, as revised, is commensurate with the amount of such improvement. Here, EPA is proposing a standard that would effectively prohibit all visible plumes (i.e., a 5% opacity standard), require the complete enclosure of large industrial operations, and potentially require improvements to emission control devices and ventilation systems without showing that any facilities currently meet these standards, a description of what changes would be made for a BOPF shop to maintain a full enclosure, or confirming any

concerns with human health risks or improvements thereto. It is not enough to say that a total enclosure would reduce HAP emissions and prevent visible emissions—and therefore it is "necessary" to do so. That is not, nor has it ever, been the test. The Agency must make a demonstration that there has been a development, and it must take costs into account.

Response 7:

As described in the preamble for this final rule, in response to comments raising concerns that the proposed limits would be excessively burdensome (for example the comment that the 5 percent limit might require construction of full enclosures and additional control devices), and after further review of available data, we are not finalizing any changes to the opacity limits for the BF casthouse or BOPF Shop in this final action. We are still finalizing work practice standards for the BOPF shop. We expect the capital and annual costs to comply with these work practice standards will be reasonable. The available data and estimated costs are described in the preamble for this final rule and in the technical memo titled: Unmeasured Fugitive and Intermittent Particulate Emissions and Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF (UFIP Memo), which is available in the docket for this final rule.

We disagree with the commenter that section 112(d)(6) requires EPA to demonstrate that a revision to a standard will "affect a material improvement to public health or the environment" to find such revision "necessary" under this provision of the Clean Air Act. When Congress revised the Clean Air Act in 1990, it directed EPA to regulate HAP through technology-based standards. *See Sierra Club v. EPA*, 353 F.3d 976, 979 (D.C. Cir. 2004). In reviewing these technology-based standards pursuant to section 112(d)(6), EPA must take into account whether revision of these standards is necessary based on "developments in practices, processes, and control technologies." This review is required every 8 years, and "ensures that, over time, EPA maintains source standards compliant with the law and on pace with emerging developments that create opportunities to do even better." *LEAN v. EPA*, 955 F.3d at 1093. The Act further requires EPA to ensure that standards applicable to major sources under 112 provide an ample margin of safety to protect public health and the environment. *See* CAA 112(f)(2)(A). Nothing in the CAA suggests that if EPA finds that the existing standards are sufficient to ensure an ample margin of safety to protect public health and to prevent adverse environmental impacts, or that revisions to the standards will not materially improve public health or the environment, that EPA should not undertake the required review or revise standards under section 112(d)(6) to ensure that standards remain "on pace with emerging developments."

1.2 Data collection activities

Comment 1:

[1627] Commenters stated that EPA did not even attempt to gather all the data it needed to set lawful limits for steel mills' uncontrolled emissions. Then, waiting until July 31, 2023 – less than three months before the final rule was due – EPA published its current proposal.

[1591] Commenters stated the EPA is pushing the proposed rule on a very tight timeline based upon an agreed upon court deadline. However, many provisions in this rule go well beyond what

was compelled or contemplated in the timeline. This process should be one that is driven by thorough analysis and stakeholder engagement not agreed upon deadlines. Commenters asked that the EPA review their extensive comments and engage in a conversation to work toward a rule that is technically feasible and based in sound data.

Response 1:

EPA acknowledges the tight timeline for the rule. However, EPA is under a court-ordered deadline and did not have flexibility to extend the time after proposal. Regarding the data, the EPA typically has wide latitude in determining the extent of data-gathering necessary to solve a problem and courts generally defer to the agency's decision to proceed on the basis of imperfect scientific information, rather than to "invest the resources to conduct the perfect study." *Sierra Club v. EPA*, 167 F. 3d 658, 662 (D.C.Cir. 1999). "If the EPA were required to gather exhaustive data about a problem for which gathering such data is not yet feasible, the agency would be unable to act even if such inaction had potentially significant consequences . . . . [A]n agency must make a judgment in the face of a known risk of unknown degree." *Mexichem Specialty Resins, Inc.*, 787 F.3d. 544, 561 (D.C. Cir. 2015).

Regarding the data used to establish the MACT limits, for each MACT limit, EPA had at least two stack tests from two different facilities for a minimum of six test runs. For most MACT limits, EPA had stack tests from four, five or six facilities (i.e., 12 to 18 test runs). Given that the facilities and operations are similar, we conclude that EPA had sufficient data to establish appropriate MACT limits.

Furthermore, as explained in the preamble, we made several corrections and updates to the MACT limits based on public comments. For more details see the preamble and the technical memorandum titled: *Maximum Achievable Control Technology Standard Calculations, Cost Impacts, and Beyond-the-Floor Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF,* which is available in the docket for this action.

1.3 Emissions testing

Comment 1:

[1562] Commenters stated that they are concerned about performance testing after the initial performance tests occurring only every 2.5 years and, in many cases, only every 5 years. They believe these performance tests should be conducted annually.

Response 1:

The EPA acknowledges the commenters' support for periodic performance testing. Where periodic performance testing is required, there are additional measures (e.g., continuous monitoring of control device operating parameters) to ensure that control devices are operating as required at all times. Periodic performance tests help identify potential degradation of the add-on control device over time and ensure the control device remains effective, reducing the potential for acute emissions episodes or noncompliance. The EPA disagrees with the

commenter that, in the case of these sources, more frequent periodic performance tests are necessary and is finalizing the frequency of performance testing as proposed.

1.4 Background information and data

Comment 1:

[1489] Commenters stated that the overall purpose of the EPA is to establish a national policy for the environment; to authorize studies, surveys, and research relating to ecological systems, natural resources, and the quality of the human environment; and to establish a Board of Environmental Quality Advisers. This is directly from the NEPA of 1970 that was signed by President Nixon which led to the creation of the EPA. The commenter said there are a lot of arguments for what the EPA should and shouldn't do, but it's important to keep this statement in mind because it provides evidence of what mindset the lawmakers were in when they crafted this bill.

Response 1:

The EPA acknowledges the statement from the commenter and is always operating with this purpose in mind.

1.4.1 EPA resources

Comment 1:

[Mass Mail] Commenters stated that the regulation, when using the EPA's conservative estimates, shows that Iron & Steel Facilities present low, acceptable risks with an ample margin of safety to protect public health. Commenters stated that the currently proposed amendments have been based on limited data and do not consider variations in operations.

Response 1:

The EPA has made use of all valid test data, both received through the request in 2022 and submitted during the comment period. This data has been incorporated into the final limits for opacity, the MACT floors, and other UFIP sources. For more details, see the technical memos cited in other responses.

Comment 2:

[1631; 1497] Commenters stated that the proposal violates CAA Section 307(d) because EPA has not provided at least 30 days to comment on the data, information, and documents on which it relied to calculate the proposed limits. EPA failed to include in the docket (or elsewhere) the data, information, and documents that showed the methodology for analyzing the test result data to determine the proposed emission limits. Specifically, after being requested by stakeholders who were unable to assess how EPA applied the Upper Prediction Limit (UPL) approach from the materials in the docket, EPA placed the workbooks underlying its calculations for these thirty standards on its website on September 7, 2023. Yet, EPA is closing the comment period on September 29, 2023. The delays in providing critical information have not been exclusive to these proposed HAP limits. The proposed rule would affect virtually every operation at an II&S

facility. The significant delays in completing the docket, which has yet to be accomplished, also apply, for example, to the proposed opacity and work practice standards and fenceline monitoring requirements (e.g., the Excel workbooks on UFIP costs, emissions, and emissions reductions; and the fenceline Cr Delta-C calculation).

[1720] The EPA has not released the relevant information, including technical justification analysis and evaluation, to the regulated community and public to support the Agency's revised NESHAP proposal.

Response 2:

We disagree that EPA violated 307(d) of the CAA because the relevant emissions data and the technical memorandum that explains how EPA derived the MACT limits (using the well established UPL methodology) have been in the docket. The data and calculation of the emissions limits are described in the following two technical documents: *Point Source Data Summary for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF* and the *Maximum Achievable Control Technology Standard Calculations, Cost Impacts, and Beyond-the-Floor Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF* which are available in the docket for this final action. It is true that EPA provided the workbooks that show the specific cell by cell calculations for these thirty standards on its website on September 7, 2023 (22 days before the end of the comment period), but we consider the act of providing the workbooks a courtesy of the EPA to make it easier for commenters to repeat EPA's calculations, but such workbooks were not necessary as part of the public's review of the proposed rule.

Comment 3:

[1631] Commenters state that the proposal's cost estimates fail to sufficiently and appropriately address the full extent of capital project and annual operating costs that industry would reasonably expect to incur to comply with the proposed new opacity standards. As also discussed in Industry's UPL Memorandum included as Appendix B, EPA has overtly ignored relevant opacity data it had in hand for these sources clearly demonstrating that these units today are materially unable to comply with the proposed opacity limits. There are volumes of data and enforcement records that also support how challenging it is for BOPF shops and BF casthouses to meet the current 20% opacity limits.

Response 3:

As described in a previous response in this document, and as described in the Federal Register Notice (i.e., preamble) for this final rule, to address the claims and concerns that the proposed limits would be excessively burdensome (for example the comment that the 5 percent opacity limit might require construction of full enclosures and additional control devices), and after further review of available data, we removed the proposed opacity limits for BF casthouses and BOPF shops. The opacity limits in the NESHAP will remain at 20 percent (same limits as promulgated in year 2003). We are still however finalizing work practices for BOPF shops. Based on evaluation of available opacity data and ability of facilities to implement relatively low cost work practices to help minimize emissions, we conclude that facilities will be able to comply with these new work practices without the need for any excessive capital expenditures.

No facility will need to construct additional enclosures or additional control devices to comply with the work practices. We expect the capital and annual costs to comply with these work practice standards will be quite reasonable. Some of the main work practices to minimize emissions are the following: Establish appropriate hot iron pour/charge rate (minutes); optimize positioning of hot metal ladles with respect to the hood face and furnace mouth; optimize furnace tilt angle during charging; and use higher draft velocities to capture more fugitive emissions at a given distance from the hood.

The available data, work practices and estimated costs are described in the Federal Register Notice (i.e., preamble) for this final rule and in the technical memo titled: *Unmeasured Fugitive and Intermittent Particulate Emissions and Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF* (UFIP Memo), which is available in the docket for this final rule.

1.4.1.1 Risk model

Comment 1:

[1631] Commenters stated that EPA has failed to correct known emissions errors that result in overestimation of risk for point sources. EPA's 70-in-1 million estimated MIR cancer risk based on allowable point source emissions significantly overstates risk from sources in the II&S source category due to a number of significant methodological flaws. EPA based this risk figure on risk drivers it determined from its review of the Braddock/Edgar Thomson facility. As industry commenters explained during the 2019-2020 proposed and final RTR process, the Braddock/Edgar Thomson facility risk assessment is based on several mistakes and incorrect assumptions that inflate the point source risk estimates.

Response 1:

The EPA did not perform or rely on any modeling to inform the decisions or actions in this rulemaking. The 2020 RTR risk modeling referenced in this comment has previously been addressed in the Background Information for Final Rule - Summary of Public Comments and Responses, May 2020, which can be found in the docket for this rule. As summarized in that document, we concluded there was no clear trend in the data that would affect the estimate of risk. Furthermore, in the overall 2020 RTR risk assessment and the 2020 RTR final rule preamble, the EPA determined that the source category risks were acceptable and that the NESHAP provided an ample margin of safety (AMOS).

Comment 2:

[1631] Commenters stated that the proposal's risk modeling for the Gary example facility for nonpoint sources relies on improper methodologies. For the Gary facility, EPA modeled risk for UFIPs using inputs extrapolated from 2012 stack test results. Unfortunately, the BF casthouse baghouse test results that were used for the BF HAP emissions as well as to develop the HAP to PM ratios for UFIPs are not valid due to anomalies in the testing and processing of the test samples. The original model runs present risk in a manner that is misleading to the public and inconsistent with core EPA policies. (See, e.g., EPA, Strengthening Transparency in Regulatory Science; Proposed Rule, 83 Fed. Reg. 18,768 (Apr. 30, 2018).) Commenters stated that although EPA acknowledged gross overestimations of risk for nonpoint fugitive emission sources during

the 2020 RTR, the current proposal impermissibly fails to correct known emissions estimation errors and to remodel with the full information in EPA's possession. While EPA's decision not to develop more accurate emissions and risk estimates in the course of finalizing the RTR in July 2020 may have made limited sense at that time, given EPA's acknowledgement based on the AISI data that the true risks would likely be lower than EPA's estimates, it has nevertheless now produced a serious problem with respect to the current proposal. Having started with an overinflated sense of the emissions and the risk posed by the II&S source category, the current proposal also overinflates the benefits that are projected to accrue from both the new and the revised standards being contemplated.

Response 2:

The EPA did not perform or rely on any modeling to inform the decisions or actions in this rulemaking. The 2020 RTR risk modeling referenced in this comment is described in the RTR final rule that was published in the Federal Register on July 13, 2020 (85 FR 42074) and in the Background Information for Final Rule - Summary of Public Comments and Responses, May 2020, which can be found in the docket for this rule. The 2020 RTR rule focused on HAPs pursuant to CAA section 112(f). The calculation of benefits for the current 2024 final rule are based on estimated reductions of fine particulate matter (PM), also known as $PM_{2.5}$. See the Regulatory Impact Analysis (RIA) that supports this final rule for details regarding the benefits analyses. The RIA is available in the docket for this rulemaking.

Comment 3:

[1631] Commenters stated that the use of total suspended particulates (TSP) in the proposal for inhalation risk needs to be revised to be modeled based on the PM10 fraction. EPA has modeled arsenic and chromium emissions, which are the main drivers of risk in this industry according to EPA, using TSP. This approach is not appropriate to model inhalation risk because larger particles are not inhaled. Rather, the size range should be limited to PM10, i.e., the inhalable portion. (The PM2.5 portion of PM10 represents the respirable portion with the greatest impact from a public health risk perspective. Therefore, even when more appropriately analyzing PM10, the relevant fraction is overestimated). EPA has recommended PM10 as the most appropriate fraction for evaluating exposure to toxic metals, (EPA, Quality Assurance Guidance Document - Model Quality Assurance Project Plan For the National Air Toxics Trends Stations, EPA 454/R-02-007, (Dec. 2002).) recognizing that "[w]ith the exception of lead (for which the [National Ambient Air Quality Standards ("NAAQS")] was developed with explicit recognition of non-inhalation exposure pathways), metals screening levels are more suited for use with the concentration of metal in particles captured in a PM10 sample." (EPA, Schools Air Toxics Monitoring Activity (2009) – Uses of Health Effects Information in Evaluating Sample Results, at 6-7, Table 1 n.2 (Sept. 10, 2009), https://tinyurl.com/4jp7a7rb.) Other agencies have also recognized that PM10 is the appropriate size to measure particulate inhalation risk. This is because PM10 is a more appropriate and accepted measure for modeling inhalation risks as the inhalable portion of particulate emissions. The use of TSP concentrations is therefore unjustified for the inhalation risk assessment.

Response 3:

As described in a previous response in this document, the EPA did not perform or rely on any modeling of risks to inform the decisions or actions in this rulemaking. The 2020 RTR risk modeling referenced in this comment is described in the RTR final rule that was published in the Federal Register (FR) on July 13, 2020 (85 FR 42074) and in the Background Information for Final Rule - Summary of Public Comments and Responses, May 2020, which can be found in the docket for this rule, as well as various technical memoranda cited in the July 2020 FR Notice. Therefore, this comment is not relevant for the current rulemaking.

Comment 4:

[1631] Commenters stated that information since the 2020 RTR validates the low-risk determination for this source category. In its 2020 RTR final rule, EPA identified arsenic and chromium as the HAP metals driving the highest risk, with lead having "relatively high emissions estimates" in this low risk source category. Even where EPA references estimated potential increases in emissions in the preamble to the proposed 2023 amendments (which Industry Commenters dispute as overestimations) — lead concentrations remain sufficiently below the lead primary health-based NAAQS. As detailed in the following sections, although EPA claims that monitored concentrations of arsenic, chromium, and lead are far greater than modeled concentrations (and therefore EPA incorrectly concludes that emissions were underestimated in the risk modeling for the 2019-2020 RTR rulemaking), Industry Commenters cannot replicate EPA's purported monitor-to-modeling ratios. Instead, the data shows that there is significant agreement between the monitored concentrations and the modeled concentrations, further validating the conclusion of low risks from the source category.

Response 4:

The EPA agrees that the lead concentrations remain sufficiently below the lead primary health-based NAAQS. We compared the average 6-month fenceline measurements at each of the 16 monitoring locations to the Pb National Ambient Air Quality Standard (NAAQS), which is 0.15 µg/m3 (based on a three-month rolling average). For all locations at all facilities, the averages were well below the NAAQS level, with the highest average only 20 percent of the NAAQS, indicating that lead concentrations are below levels of concern at the fenceline for this source category. The EPA recognizes the estimated monitored-to-modeling concentration comparisons are subject to uncertainty based on the underlying assumptions and methodologies used in the previous 2020 RTR modeling analysis, however we disagree with the commenter that our analysis of the modeled pollutant concentration and the actual pollutant concentration at the fenceline requires revision. This model-to-monitor concentration comparison is purely informational and did not inform any of the decisions or actions in this rulemaking. No changes are being made to the rulemaking as a result of this comment.

1.4.1.2 UFIP emissions estimates

Comment 1:

[1631] Commenters stated that EPA uses an incorrect and inappropriate HAP/PM ratio when estimating emissions from slag handling, storage, and processing operations. EPA utilizes a HAP/PM ratio of 3.4% to estimate HAP emissions from slag handling, storage, and processing operations, which is reflected in EPA's April 3, 2023, UFIP Memorandum. (2023 UFIP Memo).

This 3.4% ratio is unsupported and may have been a scrivener's error. EPA does not identify the origin of this factor or substantiate why this factor was used instead of the slag-specific HAP/PM ratio value of 0.42% used for the risk modeling in 2018. Using the 3.4% factor, which appears to have been based on BOF or blast furnace data, causes an overestimation of HAP emissions from slag on the order of 10 times.

Response 1:

EPA has identified slag handling, storage, and processing operations as a previously unregulated source of HAP emissions. Therefore, pursuant to the *LEAN* decision and CAA section 112(d)(2)/(d)(3), EPA is establishing emissions standards for this previously unregulated source. In this action, EPA is promulgating an opacity limit of 10 percent, which we conclude represents the MACT floor level of performance, which is the minimum stringency allowed by the CAA section 112(d). The ratio of PM to HAP has no effect on the determination of the final standard. Therefore, whether EPA uses the ratio of 3.4 percent versus 0.42 percent would not affect the final emissions standard.

Comment 2:

[1631] Commenters stated that EPA has not deducted stack emissions from the blast furnace and BOF when it estimates fugitive UFIP emissions from the BF casthouse and BOPF shop, resulting in an overestimation. EPA makes no adjustment in the BOPF shop and BF casthouse fugitives emission factor or emission estimates in its April 3, 2023, UFIP Memorandum. By failing to make this adjustment, EPA has overstated PM and HAP emissions from the BF casthouse and BOPF shop fugitive UFIPs, and this needs to be corrected. The difference in the two emission factors with and without this reduction is reflected in Table IV.5 below.

[Commenter includes Table IV.5 – Comparison of Emission Factors With and Without Stack Reduction]

Response 2:

In the proposed rule, we estimated the annual costs would be $500,000 per year for the entire source category, with cost effectiveness (CE) of $19,600 per ton ($/ton) for the BOPF proposed standard, and annual costs of $740,000 per year with CE of $51,400/ton for the proposed standards for the BF casthouse. Historically, EPA has accepted CE up to $1.4 million (in 2009 dollars) for HAP metals (such as lead and arsenic), as shown in the 2012 Secondary Lead Smelting RTR final rule (77 FR 556, January 5, 2012), which equates to about $2 million per ton in 2022 dollars, which is about 40 times higher than the estimated cost effectiveness for the Proposed Rule for BF casthouse and 100 times higher than the CE for the BOPF. After reviewing comments detailing concerns regarding the proposed opacity limits for BF casthouses and BOPF shop fugitives, the EPA has decided to not make revisions to the existing opacity limits for these sources at this time. After making this adjustment, we estimate the costs will be the same that we had at proposal to reflect the required opacity testing for BF casthouse and BOPF shop fugitives and work practice standards for BOPF shop fugitives. It is unclear to us whether or not an adjustment should be made to deduct stack emissions to estimate emissions. Nevertheless, even if we did make such adjustment, we conclude that cost effectiveness would still be well within the historical range. Therefore, any adjustments to deduct stack emissions would not change EPA's decision to promulgate the limits described above. Therefore, EPA did

not incorporate any deductions for stack emissions while estimating emissions from the BF casthouse or BOPF Shop.

Comment 3:

[1631] Commenters stated that EPA fails to use the best information available and makes several incorrect assumptions when estimating emissions from the seven UFIP source types, which also affects its estimates of emission reductions. The record for this rulemaking reveals a stark contrast between the depth of analysis Industry Commenters have provided to explain the fundamental processes resulting in fugitive emissions, the effectiveness of controls in place, process engineering principles, and the nature of the resultant emissions and the heavy reliance on engineering judgment and EPA's application of emission factors that have been applied without proper analyses and diligence. The commenter states that, as an example, EPA appears to have applied a bell leak emission factor taken at face value, without understanding the underlying uncertainty and conservatism built into the emission factor basis, and then accepted an unsubstantiated leak rate estimate offered from internal agency staff. This emission factor appears to be (1) a compromised emission factor that belies any solid technical justification and (2) an unrealistic estimate of baseline emissions. By contrast, even though the industry documented in detail in the 2022 ICR responses and in prior communications on the subject (Email from Donna Lee Jones to Paul Balserak, American Iron and Steel Institute, Leaking Rate from Literature at 7-8), the proposed action fails to correct the errors and biases in the emissions estimates.

Response 3:

EPA recognizes that there are uncertainties in the emissions estimates. Nevertheless, for all five currently unregulated UFIP emissions sources (unplanned openings, planned openings, slag processing, Bell leaks, and beaching), EPA is promulgating MACT floor standards (i.e., opacity limits and/or work practices that reflect average performance of the top five sources), which are the least stringent standards allowed by CAA section 112(d)(2)/(d)(3). Therefore, any changes in estimated emissions would have no effect on the final standards and therefore it is not necessary to make any changes to the estimated emissions.

Nevertheless, emissions of PM were estimated for the UFIP sources using PM emission factors developed by EPA from the literature, activity data, and discussions with the II&S industry representatives. Activity factors of continuous nonpoint sources were based on industry production values. The frequency of emissions for BF planned openings were estimated from responses to the 2022 section 114 collection, and the frequency of other noncontinuous (i.e., intermittent) nonpoint sources were estimated by EPA or the II&S industry. For more details, see the technical memorandum titled: *Unmeasured Fugitive and Intermittent Particulate Emissions and Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF (UFIP Memo).*

After considering comments, EPA is finalizing a 20% opacity action level for bell leaks.

Comment 4:

[1631] Commenters stated that EPA inappropriately relies on invalid stack test data rather than valid retest data to establish a ratio between particulate matter and HAP emissions that results in a significant overestimation of HAP emissions. Rather than relying on the more appropriate HAP/PM ratios from the 2018 Gary Works stack test data for purposes of this current 2023 rulemaking, EPA inexplicably relied on the older, invalidated 2012 test data that it previously used for an entirely different purpose: intentionally conservative modeling to determine human health risk with an ample margin of safety. Had EPA relied on the more appropriate, valid Gary Works stack test data from 2018, the emission estimates would be more accurate and more reflective of actual emissions from the UFIP sources. So, rather than a very conservative estimating 248 tpy of fugitive HAP emissions as a baseline, the more accurate estimate would have been 100 tpy of fugitive HAP emissions. The commenter said EPA cannot reasonably rely on an invalidated stack test that led to conservatively high emission rates and that may have been appropriate for risk modeling but is not appropriate for estimating current emission rates or determining relevant cost-effectiveness rates.

Response 4:

The EPA disagrees with the commenter as to the validity of the arsenic emissions results from the test in question. As discussed in the *Summary of Public Comments and Responses for Risk and Technology Review for Integrated Iron and Steel Manufacturing Facilities* (EPA-HQ-OAR-2002-0083-1100 page 6-25), the values for arsenic during that test at the facility were comparable to that at the Fairfield site. Although this site has since closed, the test values indicate that the high results are within the realm of possible. Additionally, the test report was certified by the facility as true, and no concerns were noted with the original submission, nor raised by the facility in the quality assurance/quality control process for both the emissions summary and the modelling file in 2012 and 2013. The concerns were only raised when the example facility analysis was in progress in 2018. Unfortunately, blank data for correction was not submitted during the source test, so no direct data is available to invalidate the data. As such, the test has not been invalidated, but is being used with all other data that was subsequently made available for the determination of the HAP/PM ratio.

Comment 5:

[1631] Commenters stated that in establishing the proposed MACT floor for planned PRD openings, EPA relied only on limited data received from operators reflecting opacity testing from 2022 related to planned openings as specified in EPA's 2022 ICR. The 2022 dataset included only a few hours' worth of data during limited planned PRD openings that occurred during a brief 2-month period. As EPA is aware, a much longer period is needed to ensure the collected data is representative of a facility's operations and level of utilization.

The commenter also stated that the annual limit of five unplanned PRD openings is flawed and inappropriate. EPA utilized data from a single year of operation, and its analysis failed to take into account variations among the 14+ different furnaces at eight Integrated Iron and Steel facilities when developing its proposed annual limit on the number of unplanned PRD openings. By limiting its analysis to a single year of operation and without taking into account facility-specific variations, EPA's analysis is flawed. The data upon which EPA relied are not even meaningful because the methods to minimize the number of unplanned openings are furnace-specific and depend on furnace-specific factors (e.g., furnace size). If EPA intended to establish

an annual limit on the number of openings, it should have looked at three to five years' worth of data at a minimum.

Response 5:

The EPA identified BF planned bleeder valve openings and unplanned openings as unregulated sources of HAP emissions. Pursuant to the *LEAN* decision and CAA section 112(d)(2)/(3), we are finalizing MACT Floor standards, which is the minimum stringency allowed by the CAA section 112(d). Additionally, as provided in CAA section 112(h), if it is the judgment of the Administrator that it is not feasible to prescribe or enforce an emission standard under CAA 112(d)(2) and (3), the EPA may set work practice standards under CAA 112(h) in lieu of numerical emission standards. For BF unplanned bleeder valve openings, the Administrator has determined that since there is no direct measurement of emissions, we are finalizing a work practice standard. As explained in the preamble, we agree with the commenter that larger BFs are able to accommodate higher internal pressure and that subcategorization based on BF size is appropriate. In the final rule, we define "large BF" as a BF with a working volume greater than 2,500 m^3 and are establishing separate limits on unplanned openings for large and small BF.

EPA also agrees with commenters that it is important to account for variability in the incidence of unplanned openings. Accordingly, in the final rule the EPA has decided to base the limit on the highest number of unplanned openings reported within the top five sources, rather than the proposed approach of basing the limit on the average number of unplanned openings within the top five sources. This work practice limit is issued under section 112(h), and was developed by evaluating the number of planned openings, which are qualitative criteria and not a direct measurement of emissions since they correlate to certain source-specific factors such as furnace size and operational processes.

With regard to planned openings, based on our evaluation of public comments and available information, pursuant to CAA section 112(d)(2) and (3) and the *LEAN* court decision, for existing sources we are promulgating a MACT Floor limit of 8 percent opacity for any 6-minute averaging period for the BF planned bleeder valve openings. For new sources, we are promulgating an opacity of 0 percent because based on the available data, the best performing single source had opacity of 0 percent during the planned opening, which we consider the MACT Floor level for new sources pursuant to CAA section 112.

As we explained in the proposed rule, we determined based on evaluation of available information that emissions can be minimized from bleeder valve planned openings cost effectively by implementing various actions before the valves are opened such as: (1) tapping as much liquid (iron and slag) out of the furnace as possible; (2) removing fuel and/or stopping fuel injection into the furnace; and (3) lowering bottom pressure. However, as explained in the proposed rule preamble, we did not propose any specific work practices for the BF planned bleeder valve openings and we are maintaining the decision to not require any specific work practices for the final rule. Facilities will have the flexibility to choose an appropriate approach to meet the opacity limit.

Comment 6:

[1631] Commenters stated that EPA overestimates the baseline emission rates for planned openings and associated emission reductions based on actions EPA anticipates would be needed for all furnaces to meet an 8% opacity limit (6-minute average). The commenter said the proposal overestimates baseline HAP emissions and reductions in HAP emissions associated with the proposed work practice standards and limit on the number of unplanned openings per year. The commenter stated the proposal overestimates HAP metal emissions and emission reductions associated with bell leaks. EPA estimates an industrywide annual HAP emission rate of 76 tpy from bell leaks, and that if bells were replaced more frequently due to the proposed requirements for testing and repairs or replacements, emissions could be reduced by 31 tpy. EPA cites to unsubstantiated "experience" with the II&S industry and its own "engineering judgment" without any technical analysis as support for its emission estimates or the reduction in emissions that should occur based on the proposed action level and bell repair and replacement requirements.

Response 6:

We acknowledge that there are uncertainties in the emissions estimates for planned and unplanned openings and bell leaks. Actual emissions could be somewhat higher or lower depending on what emissions factors are used as well as other factors. The EPA's estimated emissions are documented in the technical memorandum titled: *Unmeasured Fugitive and Intermittent Particulate Emissions and Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF (UFIP Memo).* Nevertheless, for all three of these sources, we are promulgating standards that reflect the MACT Floor level of performance, which is the minimum stringency allowed by the CAA. However, we did make some adjustments to the proposed standards for unplanned openings and Bell Leaks (as described in the preamble) based on consideration of public comments.

For Bell Leaks, we changed the requirement to the following: facility must perform a visible emissions reading once per month. If VE is positive (i.e., an evaluator observes smoke), then the facility must perform an EPA Method 9 reading. If the EPA Method 9 identifies opacity greater than 20 percent, then the facility shall initiate corrective actions within five business days. If the first attempt to correct fails, and EPA Method 9 again identifies that opacity is not reduced to 20 percent or lower, the facility would have another five business days to initiate further corrective actions to reduce opacity to 20 percent or lower. Only if the second attempt does not result in an opacity of 20 percent or less would it become a deviation, requiring reporting and corrective actions that we included in the proposed rule, such as moving to the repair step or, if unsuccessful, replacement of the large bell.

As explained in the preamble, we agree with the commenter that larger BFs are able to accommodate higher internal pressure and that subcategorization based on BF size is appropriate. In the final rule, we define "large BF" as a BF with a working volume greater than 2,500 m^3 and are establishing separate MACT Floor limits on unplanned openings for large and small BF.

For planned openings, we proposed a MACT floor limit of 8 percent opacity and are finalizing that limit as proposed.

Comment 7:

[1631] Commenters stated that EPA arbitrarily chose a narrow subset of available data to use in developing its proposed 5% opacity standard, and no facilities currently meet this standard. The proposal is based on opacity testing for a few hours over a 1- to 2-day period at several but not all of the BOPF shops pursuant to EPA's ICR. All of those tests occurred within a 2-month window. EPA explains in the proposal that it reviewed only that limited dataset in making its determination that BOPF shops should be subject to a 5% opacity standard—because several of those tests indicated low opacity readings. The commenter stated that EPA's conclusion that the BOPF shops analyzed were already consistently below 5% opacity is incorrect. EPA's further conclusion based on that limited dataset that the other BOPF shops would be able to improve their particulate emissions to achieve opacity at 5% or lower is also wrong. It is also no response that the information collected by EPA Region 5 in the context of regulatory inspections and enforcement proceedings would be too problematic for the rulemaking staff to analyze. Opacity readings conducted by EPA or pursuant to EPA's requests of the facilities are not able to be excluded from analysis merely because they were collected for enforcement purposes.

Response 7:

After proposal, we reviewed additional opacity data and considered all the public comments received from stakeholders. Based on evaluation of all this information, we made significant revisions to the limits to address industry's concerns, as described in the preamble and other responses in this RTC.

2. Standard Analytical Procedures and Decision-Making

Comment 1:

[1595] Commenters cited the following passage from the CAA, "For major sources, CAA section 112(d)(2) provides that the technology-based NESHAP must reflect the maximum degree of emission reductions of HAP achievable (after considering cost, energy requirements, and non-air quality health and environmental impacts)." Commenters stated they have overarching concerns that the proposed amendments are not achievable, when considering these factors.

[1595] Commenters stated the EPA must review whether the proposed emission reductions are technologically feasible. Recognizing that the EPA is required to issue a revised final rule in October, per court order, the prior mandatory review was finalized only three years ago in July 2020. While the 2020 review found that there were no developments in practices, processes, and control technologies that warrant revisions to the standard, the commenters question whether there have been significant enough technological advances or updates over the last three years to reasonably achieve the required reductions proposed in these amendments.

[1595] Commenters stated to achieve the EPA's proposed reduction in fugitive HAP emissions, a steel company may have to construct a total enclosure around portions of a facility. While this would limit emissions outside of the facility, it would put workers inside the facility at increased

risk. Commenters stated this tradeoff is unacceptable and would render the proposed requirement infeasible.

[1595] Commenters recommended that the EPA review the technology assessment and newly required work practices using additional data from industry experts and impacted companies to determine if the proposed amendments are feasible.

Response 1:

We reviewed additional opacity data and considered the public comments received from stakeholders. Based on evaluation of all this information, we made significant revisions to the opacity limits to address industry's concerns, as described in the preamble and under other responses in this document.

2.1 Technology review

Comment 1:

[1631] Commenters state that EPA has not met its burden of demonstrating that a revision of the standards is "necessary" under section 112(d)(6). Here, EPA is proposing to require fenceline monitoring for chromium without establishing any nexus between chromium levels that could be measured at the fenceline and total metal HAP concentrations from UFIP sources, without establishing that the monitored chromium levels could be tied to compliance with opacity and source-specific work practice standards, and without demonstrating or even alleging that the fenceline monitoring requirements would result in any reduction in HAP emissions. EPA must withdraw the proposed requirements for a fenceline monitoring program and avoid imposing unnecessary compliance costs on industry. This approach, which Industry Commenters strongly recommends, would be consistent with EPA's less stringent option identified the RIA which is to require no fenceline monitoring. (2023 RIA)

[1631] Commenters contended the proposed fenceline monitoring regulations should not be adopted. They stated the proposal inappropriately attempts to justify the fenceline monitoring program by relying on legal authority for technology reviews under CAA section 112(d)(6). They argued fenceline monitoring does not constitute a development that has occurred since the conclusion of the last technology review in July 2020.

[1631] Commenters cited the following text from the 2023 proposal (88 FR 49415):

> Based on our analysis of the available data and reductions we expect would be achieved by the proposed work practices and opacity limits described above in sections IV.A and B, we are proposing a fenceline monitoring requirement in the NESHAP pursuant to CAA section 112(d)(6). Fenceline monitoring refers to the placement of monitors along the perimeter of a facility to measure pollutant concentrations. Coupled with requirements for root cause analysis and corrective action upon triggering an actionable level, this work practice standard is a development in practices considered under CAA section 112(d)(6) for the purposes of managing fugitive emissions.

[1631] Commenters stated that under CAA section 112(d)(6), Congress authorizes and requires the EPA to take into account "developments in practices, processes, and control technologies." This language describes a range of matters rather more circumscribed than an open-ended reference to developments "in the industry" without limitation. Not only is the EPA undertaking a discretionary review, the Agency is also conducting that review under provisions that do not apply. The EPA has, in fact, not identified or attempted to assert any sort of "development" within the meaning of paragraph (d)(6) that has occurred since the Agency's last review concluded in July 2020.

[1631] Commenters stated that according to the 2023 proposal, a "development" under section 112(d)(6), is:

- Any add-on control technology or other equipment that was not identified and considered during development of the original MACT standards;
- Any improvements to the add-on control technology or other equipment that was identified and considered during development of the original MACT standards that could result in additional emissions reductions;
- Any work practice or operational procedure that was not identified or considered during development of the original MACT standards;
- Any process change or pollution prevention alternative that could be broadly applied to the industry and that was not identified or considered during development of the original MACT standards; and
- Any significant changes in the cost (including cost effectiveness) of applying controls, including controls the EPA considered during the development of the original MACT standards. (88 FR 49409-49410)

[1631] Commenters stated the EPA has described the proposed fenceline monitoring program "[c]oupled with requirements for root cause analysis and corrective action upon triggering an actional level" as a work practice standard and a "development" in "practices" for purposes of section 112(d)(6). (88 FR 49415) The EPA did not, but could have, addressed a fenceline monitoring program as a work practice standard in the 2020 technology review. Fenceline monitoring using high-volume samplers and lab analyses has been around for more than two decades. The EPA promulgated Method IO-3.5 in 1999, and this is the method that the EPA required industry to use during the recent ICR fenceline monitoring last year. The EPA cites to no developments related to fenceline monitoring that have occurred since the Agency concluded the technology review in July 2020, including changes in implementation costs, and industry is aware of no such developments that would support a determination under section 112(d)(6). In fact, the EPA acknowledges that it has not promulgated a metals fenceline method and will not be proposing one until sometime in 2024. There is therefore no currently available EPA-approved method for monitoring fenceline concentrations of chromium, which is essentially an admission that there has been no development.

[1631] Commenters stated when the EPA considered fenceline monitoring in the lead acid battery rulemaking in 2022, it concluded that fenceline monitoring was indeed not a "development" in practice, process, or control technology. (87 FR 10134, 10139) The EPA found that there was no trend to add fenceline monitors to measure ambient concentrations of lead, and also found that such fenceline monitors were not generally in use at lead battery

manufacturing facilities. (EPA, Draft, New Source Performance Standards for Lead Acid Battery Manufacturing Plant And National Emission Standards for Hazardous Air Pollutants for Lead Acid Battery Manufacturing Area Sources, Summary of Public Comments and Responses on Proposed Rules at 19 (Feb. 23, 2022)) The EPA appropriately considered whether fenceline monitoring was already in use within the source category. Because no lead acid battery manufacturers were using fenceline monitors, it was therefore not a trend or development under section 112(d)(6). In addition, while costs are usually taken into account after the EPA identifies a development, here the EPA determined that it would also be very expensive with significant economic impacts, and therefore not necessary. (88 FR 11556, 11559; EPA, Response to Comments, at 19) The EPA made a similar finding for Electric Arc Furnaces when the Agency stated that they had not identified any facilities in the source category conducting fenceline monitoring, and it was therefore not a development. (EPA, Summary of Public Comments and Responses for New Source Performance Standards Review for Steel Plants: Electric Arc Furnaces; Standards of Performance for Steel Plants: Electric Arc Furnaces & Argon-Oxygen Decarburization (July 2023), EPA Docket No. EPA-HQ-OAR-2002-0049-0160) The EPA also pointed out that to date the Agency has only required fenceline monitoring for benzene and no other pollutant. (EPA, Summary of Public Comments and Responses for New Source Performance Standards Review for Steel Plants: Electric Arc Furnaces; Standards of Performance for Steel Plants: Electric Arc Furnaces & Argon-Oxygen Decarburization (July 2023), EPA Docket No. EPA-HQ-OAR-2002-0049-0160; EPA, Economic Impact Analysis for the Proposed National Emission Standards for Hazardous Air Pollutants for Coke Ovens: Pushing, Quenching, and Battery Stacks, Residual Risk and Technology Review; National Emission Standards for Hazardous Air Pollutants for Coke Oven Batteries Technology Review, EPA-452/R-23-005 (July 2023)).

[1631] Commenters argued not only is fenceline monitoring not a "development," fenceline monitoring will not achieve the EPA's goals of confirming HAP metal emission rates from UFIP sources or confirming that UFIP sources will meet the proposed opacity standards and source-specific work practice standards, as explained in more detail above. Because there has been no "development" to warrant fenceline monitoring under section 112(d)(6), the EPA should withdraw the proposal. This is even more the case when, as with this source category, the EPA has determined that the risk to human health is well below acceptable levels set by Congress and the current standards are protective of human health with an ample margin of safety. Even more, the proposed fenceline monitoring requirements would not reduce risks in any material way, while compliance with requirements would impose a significant financial burden.

[1631] Commenters stated the EPA's explicit assertion here that the fenceline monitoring program constitutes a development is inconsistent with the position the EPA took in the lead acid battery manufacturing RTR when it discounted a comment suggesting that fenceline monitoring be required for that source category. The EPA stated that fenceline monitoring was not a new trend or development and that just because it could be used doesn't mean that it is "necessary" for the EPA to require the monitoring. The EPA also found no evidence that a fenceline monitoring program for this source category would reduce emissions beyond what the rule already requires. (EPA, New Source Performance Standards for Lead Battery Manufacturing Plants and National Emission Standards for Hazardous Air Pollutants for Lead Acid Battery Manufacturing Area Sources, Summary of Public Comments and Responses on Proposed Rules at 24 (Feb. 23, 2022) ("simply because fenceline monitoring could be used to monitor fugitive

emissions or ambient air conditions at the perimeter of a facility means that it is 'necessary' for the EPA to require such monitoring"; "we did not find that fenceline monitoring in the lead acid battery manufacturing source category is a new trend in facility procedures or is generally in use at these facilities"; "[fenceline monitoring] was not identified as a development or advancement in emissions reduction control technology or control methods for either the NSPS or the NESHAP")).

[1631] Commenters asserted that the EPA certainly has not established that the fenceline monitoring program would effectuate a health benefit not already being achieved. Indeed, the 2023 Proposal identifies no reduction in emissions associated with the fenceline monitoring program. The costs of this program are significant, however, and could lead to noncompliance situations resulting in monetary penalties. At a minimum, the 2023 Proposal could require time- and resource-intensive investigations into possible root causes of any elevated annual average concentrations of chromium above an established action level without any reason to believe that such investigations would be fruitful given the short-term, intermittent, and unpredictable levels of UFIP emissions and the potential that concentrations are due to offsite sources or onsite non-UFIP sources. Commenters maintained that the DC Circuit has made clear that the EPA cannot impose costly obligations on regulated entities without regard to the extent to which public health and welfare would be protected and enhanced. Because of the significant costs in return for no health benefit, and because there are other, traditional methods of ensuring compliance with the new opacity and work practice standards, EPA should withdraw the fenceline monitoring program.

Response 1:

We disagree with the commenters that fenceline monitoring is not a proper CAA section 112(d)(6) standard because there has been no "development" as required by the statute. Fenceline monitoring has been employed as a work practice standard at petroleum refineries, promulgated as part of technology review for that source category to monitor and manage fugitive emissions as well as to aid in the monitoring of the sector's ground-level emission points. Fenceline monitoring—along with the associated root cause and corrective action requirements—as implemented at refineries resulted in a drastic decrease in the industry-wide average annual average delta c since inception, from the first quarter of 2019 through the third quarter of 2023 (the most recent publicly available quarter),[4] the industry average annual average delta c concentration decreased from approximately 6.4 $\mu g/m^3$ to approximately 3.4 g/m^3. The use of fenceline monitoring at refineries has created a feedback loop that enables source owners and operators to correct issues while maintaining flexibility and allows them to identify potential problems and perform corrective actions more quickly.

Whether such a work practice is a feasible or useful tool for a given source category depends on the specifics of that source category. We specifically proposed the fenceline monitoring standard under CAA section 112(d)(6) in this rulemaking as a work practice standard that is applied broadly to manage fugitive emissions sources located at II&S facilities. The proposed standard does more than impose monitoring as some commenters suggested; it also limits emissions from these sources by requiring the owner or operator to identify and reduce HAP emissions through a monitoring and corrective action / repair program if the action level is exceeded, as do many

[4] https://awsedap.epa.gov/public/extensions/Fenceline_Monitoring/Fenceline_Monitoring.html?sheet=background

work practice standards authorized under CAA sections 112(d) and (h). We note that the sources addressed by the fenceline monitoring standard—the five UFIP sources, sinter plants, BFs and BOFs—are already subject to emissions standards and work practice standards. Our review of these requirements indicates that this fenceline monitoring work practice standard would be a further improvement in the way fugitive emissions are managed and would, by providing such further assurance of compliance with emission standards and work practice standards, also provide an extra measure of protection for surrounding communities.

Further, the fenceline monitoring requirements being finalized will build on the new data on chromium and other fugitive emissions identified by the CAA section 114 data-gathering process that preceded this final rule. The measurement of these pollutant concentrations and comparison to concentrations estimated from mass emissions via dispersion modeling can be used to ground-truth emission estimates from a facility's emissions inventory. If concentrations at the fenceline are greater than expected, the likely cause is that there are underreported or unknown emission sources affecting the monitors. In addition to the direct indication that emissions may be higher than inventories would suggest, fenceline monitoring provides information on the location of potential emissions sources. Further, when used with a mitigation strategy such as root cause analysis and a requirement for corrective action upon exceedance of an action level, fenceline monitoring can be effective in reducing emissions and reducing the uncertainty associated with emissions estimation and characterization and help provide greater protection for workers' health and safety. While the action level is based upon the annual average, individual two-week samples can enable the facility to more quickly identify potential issues that can impact operations and worker health and safety. Found early, a potential issue can be remedied and prevented from becoming a larger issue that could impact production and profitability.

Finally, public reporting of fenceline monitoring data provides public transparency and greater visibility, leading to more focus and effort in reducing emissions.

Comment 2:

[1631] Commenters stated the proposed approach for establishing opacity and work practice standards to address particulate HAPs for UFIP sources is contrary to the plain language of CAA section 112(d). Commenters summarized each component of the proposal text describing the EPA's approach for developing section 112(d)(3) standards for UFIP sources and then asserted that each is to Congress's directives. The following is a summary of their points.

- Commenters stated as the proposal describes, "CAA section 112(d)(2) provides that the technology-based NESHAP must reflect the maximum degree of emission reductions of HAP achievable (after considering cost, energy requirements, and non-air quality health and environmental impacts)." (88 FR 49406) "These standards," "are commonly referred to as MACT standards." (88 FR 49406)
- Commenters stated the proposal describes CAA section 112(d)(3) as "also establish[ing] a minimum control level for MACT standards, known as the MACT 'floor." (88 FR 49406) For existing sources, the proposal says, the "MACT floor limits for relevant HAP are calculated based on the average performance of the best five units in each category or subcategory and on a consideration of these units' variability." (88 FR 49410) While the EPA offers no citation, the Agency is obviously referring to that portion of CAA section 112(d)(3) which provides, as relevant, that "[e]mission standards promulgated under this

subsection for existing sources . . . may be less stringent than standards for new sources in the same category or subcategory but shall not be less stringent, and may be more stringent than . . . (B) the average emission limitation achieved by the best performing 5 sources (for which the Administrator has or could reasonably obtain emissions information) in the category or subcategories for categories or subcategories with fewer than 30 sources." (CAA section 112(d)(3)(B); 42 U.S.C. section 7412(d)(3)(B)).

- Commenters stated, with respect to new sources, that the "MACT floor . . . is based on the single best-performing source," in which case the "MACT floor . . . cannot be less stringent than the emissions performance that is achieved in practice by the best-controlled similar source." (88 FR 49410) Again, the EPA gives no citation in support of this explanation of how the "MACT floor" is to be established for new sources, but the EPA clearly has in mind that portion of CAA Section 112(d)(3) which provides that the "maximum degree of reduction in emissions that is deemed achievable for new sources in a category or subcategory shall not be less stringent than the emission control that is achieved in practice by the best controlled similar source, as determined by the Administrator." (CAA section 112(d)(3); 42 U.S.C. section 7412(d)(3))
- Commenters stated when setting MACT standards for both new and existing sources that reflect this so-called "floor" level, the EPA thinks they are excused from having to take into account the factors set forth in subsection (d)(2) that bear on the EPA's ultimate determination that a given standard is "achievable." The EPA takes this position even though CAA section 112(d)(2) states, as relevant here, that "[e]mission standards promulgated under this subsection and applicable to new or existing sources . . . shall require the maximum degree of reduction in emissions of the hazardous air pollutants subject to this section . . . that the Administrator, taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements, determines is achievable for new or existing sources in the category or subcategory to which such emission standard applies . . . ." (CAA section 111(d)(2); 42 U.S.C. section 7412(d)(2)) Commenters stated nowhere in the preamble of the present proposal does the EPA expressly state that the Agency does not have to take account of the "cost of achieving such emission reduction," or of the other factors listed in CAA section 112(d)(2), when the Agency promulgates a MACT standard that reflects the so-called "minimum control level" that the EPA ascertains through the Agency's calculation of the MACT "floor." This is implied, however, by the EPA's statement that "[a]fter the MACT floor limits are developed, the EPA also evaluates potential BTF options to determine whether there are cost-effective appropriate standards that can achieve additional reductions that should be proposed instead of the MACT floor standards." (88 FR 49410) In any case, it is indisputable that, from the earliest days of the EPA's implementation of CAA section 112 following the CAA Amendments of 1990, the EPA has held to the position that the Agency is under no statutory obligation to "tak[e] into consideration" costs (or any of the other factors identified in CAA section 112(d)(2)) when establishing a MACT standard that reflects the calculated MACT "floor" and the EPA has said as much in the course of proposing revisions to RTRs in other currently pending NESHAP rulemakings, including the proposed rule, National Emission Standards for Hazardous Air Pollutants: Taconite Iron Ore Processing Amendments, EPA-HQ-OAR-2017-0664 ("Taconite rulemaking"). Specifically, in the ongoing Taconite rulemaking, the EPA sets forth the Agency's view that, "[i]n addition

to calculating the MACT floor, the EPA must examine more stringent BTF regulatory options to determine MACT," and that, "[u]nlike the MACT floor's minimum stringency requirements," with these "beyond-the-floor requirements," the EPA must consider various impacts of the more stringent regulatory options." (88 FR 30917, 30922, 30923) If, on the basis of this "consideration," the Agency "concludes that the more stringent regulatory options have unreasonable cost, non-air quality health and environmental, and/or energy impacts," then the EPA "selects the MACT floor as MACT." (88 FR 30923) "However, if the EPA concludes that impacts associated with BTF levels of control are reasonable in light of additional emissions reductions achieved," the EPA then "selects those BTF levels of control as MACT." (88 FR 30923)

- Commenters stated they have submitted [extensive] comments in the Taconite rulemaking (Comments of the American Iron and Steel Institute and United States Steel Corporation submitted July 7, 2023, EPA-HQ-OAR-2017-0664-0285) They stated they explained in those comments that the EPA's position that the Agency can establish MACT standards for existing sources that reflect the calculated MACT "floor," without taking into consideration cost (or the other factors identified in CAA section 112(d)(2), is contrary to the plain language of the Act. They stated they incorporate by reference the relevant portions of their Taconite comments, and that they reiterate and expand upon those comments for the current integrated Iron & Steel rulemaking as appropriate, in the specific context of the actions that the EPA is proposing to take with respect to facilities within the integrated Iron & Steel source category. Commenters stated the preamble explains that, in "certain instances," the EPA has authority under CAA section 112(h) to establish "work practice standards in lieu of numerical emission standards." (88 FR 49406) The EPA does not, however, discuss the provisions of subsection (h) that set forth those "certain instances" under which the Agency is authorized to set work practice standards." This is a curious omission, particularly in light of the fact that (i) CAA section 112(h) establishes rather detailed prerequisites that must be met before the EPA may permissibly forego a numerical emission standard in favor of a work practice standard; and (ii) there has developed over the years a not insubstantial body of D.C. Circuit case law addressing past decisions on the EPA's part to adopt work practice standards, situations where those decisions have not gone unchallenged. *E.g., Sierra Club v. EPA*, 479 F.3d 875 (D.C. Cir. 2007); *U.S. Sugar Corp. v. EPA*, 830 F.3d 579 (D.C. Cir. 2016); *Sierra Club v. EPA*, 884 F.3d 1185 (D.C. 2018); and *Chesapeake Climate Action Network v. EPA*, 952 F.3d 310 (D.C. 2020). Moreover, in the case of CAA rulemakings conducted under the auspices of CAA section 307(d), like this one, the EPA is required to include in the proposed rule's published "statement of basis and purpose" a "summary of . . . the factual data on which the proposed rule is based; . . . the methodology used in obtaining the data and in analyzing the data; and . . . the major legal interpretations and policy considerations underlying the proposed rule," so that interested parties can review the EPA's thinking and provide comment accordingly. (CAA section 307(d)(3)(A)-(C); 42 U.S.C. section 7607(d)(3)(A)-(C)) With respect, that the EPA may be under pressure to complete this (and other) rulemakings under an unduly short court-endorsed schedule does not exempt the Agency from the requirements of CAA section 307(d), particularly when the EPA negotiated the schedule with plaintiff ENGOs and the schedule did not originate with the court (the court merely endorsed what the parties presented to it and

adequate time could have and should have been a result achieved and supported by both the EPA and the ENGO plaintiffs).

Response 2:

The EPA disagrees that it proposed opacity and work practice standards addressing HAPs for UFIP sources is contrary to the plain language of CAA section 112(d). These separate issues are each addressed in Comment Responses 1-4 in Part 1.1 above; this commenter repeated these comments.

In sum, it was impractical for EPA to set “numeric” “emission standards” for certain processes in this source category. In these circumstances, EPA set common-sense work practice standards under 112(d)(6) that are based on a qualitative assessment of the actions taken by best performing sources to minimize emissions, as is authorized under CAA section 112(h).

Furthermore, as EPA has consistently stated, through past practice and in this current rulemaking, the provisions of section 112(d) do not mandate EPA to consider costs when establishing the MACT Floor. EPA has explained this position in Part 1 of this RTC. As has also been noted previously, the D.C. Circuit has consistently upheld the EPA’s position.

Comment 3:

[1631] Commenters stated the 30 proposed new HAP limits for new and existing point sources should not be finalized because: (1) they either are not necessary to satisfy the *LEAN* decision or are not supported by the record or both, and (2) the EPA has not provided a sufficient public comment period for the proposed standards. With respect to sinter/recycling plants, the commenters stated the EPA should not finalize the proposed amendments to add D/F and PAH emissions limits to existing VOC limits and oil-content limits applicable to sinter/recycling plants because there have been no developments that would necessitate revision, pursuant to CAA section 112(d)(6).

[1631] Commenters stated in the proposed amendments, the EPA is proposing to change the way D/F and PAH emissions are regulated from sinter/recycling plants to “improve the emissions standards for this source category based on new information regarding developments in practices, processes and control technologies.” (88 FR 49404) The EPA did not, however, make a finding that the correlation identified in 2003 between VOC and oil-content limits and D/F and PAH emissions no longer exists—and such a finding would be incorrect.

[1631] Commenters stated the 2023 preamble does not identify any purported development underlying the proposed D/F and PAHs limits explicitly. According to the EPA, the Agency proposes to “revise standards for D/F and PAHs from sinter plants to reflect the performance of current control devices.” (88 FR 49405) The existing operating limits on sinter/recycling plant feedstock oil content or VOC emissions from the sinter/recycling plant windbox exhaust in 40 C.F.R. section 63.7790(d) already limit PAH and D/F emissions from sinter/recycling plants. As the EPA has acknowledged, “[e]mission control devices applied to sinter plants are designed primarily for the removal of PM and not for the various organic compounds that are formed from the oil.” (68 FR 27652) But in the proposal the EPA seems to mistakenly attribute existing PAH and D/F emissions control to sinter/recycling plant baghouses. To promulgate the existing VOC

and oil-content limits, in 2003, the EPA reviewed data from the "simultaneous testing of oil content and VOC emissions [and] correlated the results" to derive that "maintaining the VOC at a level of 0.2 lb/ton [of sinter] or lower will ensure that the operating limit of 0.02 percent oil is maintained." (68 FR 27659) In the 2023 preamble, however, the EPA does not mention oil feedstock or VOC concentrations; rather, the EPA explains that the Agency reviewed 2012 data collected from the 2011 ICR:

> As part of our updates to the CAA section 112(d)(6) review, we analyzed available test data for D/F and PAH from sinter plants. We also evaluated potential emissions limits for D/F and PAHs. First, we developed a regulatory option that reflects the current control technologies and practices (current performance) at the existing sinter plants at the three source category facilities that have sinter plants. The sinter plants are currently controlled with baghouses or wet scrubbers. To derive an emissions limit that reflects current controls, we used the UPL approach we typically use for calculation of MACT floor limits (described above in section III.B). Using the UPL method, we calculated an emissions limit of 3.5E–08 lbs/ton of sinter for D/F (TEQ) and an emissions limit of 5.9E–03 lbs/ton for PAHs for existing sinter plant windboxes and limits of 3.1E–09 lbs/ton of sinter for D/F (TEQ) and 1.5E–03 lbs/ton of sinter for PAHs for new sinter plant windboxes. (88 FR 49417)

[1631] Commenters stated but the EPA knows, as explained in the original NESHAP, that:

> [T]he add-on emission controls used by units in the category (baghouses and venturi scrubbers) do not control vapor phase organic compounds. As a result, we believe that the best way to assess current levels of VOC emission control, and to limit such emissions is to rely upon existing methods of pollution prevention. Accordingly, we have established limits on the amount of organic HAP precursor material (specifically oil and grease) that may be in the sinter feed, in order to control emissions of organic compounds. Additionally, section 112(d)(2) of the CAA specifically allows EPA to establish MACT standards based on emission controls that rely on pollution prevention techniques. 68 FR 27657

[1631] Commenters stated thus, the 2012 performance of current sinter control devices is no different than it was at the time of the EPA's 2020 RTR less than three years ago, i.e., at-the-stack control devices do not control PAHs and D/F emission from sinter/recycling plants. The 2012 stack test data only confirms what the EPA knew and explained in 2002 and 2003: D/F and PAH emissions are well controlled using VOC and oil-content limits as surrogates. Thus, there is no development as contemplated in 112(d)(6). Moreover, the 2012 stack test data underlying the EPA's current proposal cannot be a development for the purposes of Section 112(d)(6) because this information was available at the time of the EPA's 2020 RTR that took place less than three years ago. In other words, the data that the EPA is considering now for sinter/recycling plant D/F and PAHs standards in the 2023 proposed rule is the same data the EPA relied upon for the 2020 RTR. After reviewing the 2012 stack test data under the 2020 review (84 FR 42708; II&S Point Source Data Summary Memo (EPA-HQ-OAR-2002-0083-0955)), the EPA already concluded that "no developments in practices, processes, or control technologies necessitate revision of the standards." (85 FR 42074)

[1631] Commenters stated the controls that would be required to meet the EPA's proposed new HAP limits would have adverse effects that have not been considered, notwithstanding Section 112(d)(2)'s direction that such impacts be considered in issuing a MACT standard.

[1631] Commenters noted there are several adverse environmental and energy impacts associated with ACI with a polishing baghouse to control D/F, PAH, and Hg that industry evaluated including:

- Incremental electricity for a new polishing baghouse and fans, resulting in collateral combustion emissions from power generation sources;
- Solid waste disposal of spent carbon;
- Compressed air for baghouses; and
- Make-up water for quenching hot exhaust where applicable.

[1631] Commenters stated even where the EPA identifies a purported development, the identification of a development alone does not conclude the EPA's technology review under Section 112(d)(6). The EPA must then perform an "evaluation of developments in practices, processes, and control technologies that have occurred since the MACT standards were promulgated." (88 FR 49409) "The EPA also considers the emission reductions associated with applying each development. This analysis informs [EPA's] decision of whether it is 'necessary' to revise the emissions standards." (88 Fed. Reg. at 49409) In other words, a revision must still be necessary for the change to be justified. Here, the EPA purports that there will be no environmental benefits associated with the Agency's revision of existing standards for D/F and PAHs emissions from sinter/recycling plants ("We estimate all three facilities with sinter plants would be able to meet these limits with no additional controls so there will be no emissions reductions with these new existing standards."). (88 FR 49417) In addition, technological feasibility of controlling such low, and frequently undetectable, emissions of D/F and PAH remains an issue (discussed in a separate section of the comment letter). Therefore, the revisions to existing standards that the EPA proposed are not necessary, and the EPA has not met the burden of demonstrating that a revision of the standards is necessary under section 112(d)(6). Because existing limits utilize an appropriate surrogate, the EPA should withdraw the proposal to establish separate D/F and PAHs limits that the Agency estimates would provide no meaningful benefit yet, as detailed below, would require high-cost new compliance measures. If the EPA nevertheless proceeds with such numerical limits, the Agency must revise the proposed limits upwards to help to account for known variability and limited datasets.

Response 3:

With regard to the 30 proposed new HAP limits for new and existing point sources, these limits are for previously unregulated HAP. Pursuant to the *LEAN* decision, CAA section 112(d)(2)/(3) and the Court's Order for EPA to complete this final rule (that fulfills the CAA section 112(d)(6) mandate) by March 11, 2024, EPA must establish standards for these HAP based on available data in this final rule.

We collected emissions test data through the section 114 requests, and through public comments. We used all valid available data to calculate representative MACT floor limits using the well established UPL methodology which accounts for variability in the data. So, we are finalizing

these limits similar to those proposed with some adjustments based on incorporation of new data received since publication of the proposed rule. Based on available data, we estimate that all facilities will be able to meet the MACT floor emissions limits for the point sources without the need for any additional control devices.

With regard to dioxins and furans (D/F) and PAHs from sinter plants, we conclude that we have sufficient data to develop appropriate MACT limits. We have 13 test runs from 3 different sinter plants for each of these HAP (i.e., D/F and PAHs). Furthermore, as described in the preamble, after reviewing public comments and available control technologies, we are finalizing emissions limits that reflect the installation and operation of ACI controls, which are emissions limits of 1.1E-08 lbs/ton of sinter for D/F (TEQ), 1.8E-03 lbs/ton of sinter for PAHs, and 1.8E-05 lbs/ton for mercury for existing sinter plant windboxes. Regarding new sources, we are promulgating limits of 1.1E-08 lbs/ton of sinter for D/F (TEQ), 1.5E-03 lbs/ton of sinter for PAHs, and 1.2E-05 lbs/ton for mercury for new sinter plant windboxes. The application of this ACI will achieve significant reductions of mercury, D/F and PAH emissions, important reductions given that mercury and D/F are highly toxic, persistent bioaccumulative pollutants, as described above, and PAHs (some of which are known or probable carcinogens). We expect that polishing baghouses will not be needed to meet these limits. We estimate these limits for the three separate HAP will result in total combined capital costs of $950K, annualized costs of $2.3M, will achieve 8 grams per year reductions of D/F TEQ emissions, 5.4 tpy reduction in PAHs, and 47 pounds of mercury.

Comment 4:

[1631] Commenters stated they reviewed ACI with a polishing baghouse for meeting the proposed new HAP limits and have concerns about the technology's feasibility and efficacy for meeting the limits. Commenters stated ACI with a baghouse can provide some level of emissions control of D/F under certain conditions, but cannot control D/F emissions below a certain threshold. In other words, even with applying the latest technology, it is highly unlikely that very low D/F emissions can be reliably controlled further.
[1631] Commenters specifically discussed ACI with a baghouse for potential control of D/F from BF Stoves. The baseline exhaust concentrations of D/F from BF Stoves are so low that guaranteeing any control efficiency is questionable at best. For example, the Burns Harbor Blast Furnace C Stove performance test in December 2012 achieved a D/F TEQ concentration of <7E-06 ug/dscm and the Granite City test result average was 2.6E-06 ug/dscm. Based on design conditions of D/F controls from vendors, the lowest advertised D/F exit concentration from control equipment is 1E-04 ug/dscm TEQ. (Primetals Technologies Austria GmbH, Maximized Emission Reduction of Sintering (2020), https://www.primetals.com/fileadmin/user_upload/content/01_portfolio/1_ironmaking/sinter-plant/MEROS-2.pdf) Therefore, emission rates are already below concentrations that can be guaranteed by emission control vendors and additional consistent and reliable emission reductions may not be achievable, especially since D/F emissions are less than 1 g/yr per blast furnace stove. The dilute nature of the D/F compounds would lead to limited pollutant adsorption rates to the activated carbon, rendering the controls ineffective. Given ACI limitations, the proposed limits may be unachievable considering the potential for emissions variability.

[1631] Commenters specifically discussed ACI with a baghouse for potential control of D/F from BOPF Primary Control Devices. Similarly, the baseline exhaust concentrations of D/F from the BOPF are too low to guarantee any reliable control efficiency. Further, the dilute nature of the D/F compounds in BOPF emissions would limit the pollutant adsorption rate of the activated carbon, rendering the controls ineffective. As noted above, the design conditions of D/F controls provide the lowest design exit concentration of 1E-04 µg/dscm TEQ. Here, under the EPA's estimates, each BOPF would have the potential to generate to less than 1 g/yr. For example, the Burns Harbor #1 BOPF measured D/F TEQ concentration of <1E-05 ug/dscm and the Granite City average test result was 1.2E-4 µg/dscm. These values are at or below the lowest design exit concentration of D/F control equipment. Because baseline exhaust concentrations of D/F from the BOPF are so low, it is not possible to guarantee that any predictable control efficiency would result from application of ACI with a baghouse to BOPFs. Therefore, with emission rates are already below concentrations, considering the dilute nature of D/F emissions from BOPFs it is likely that additional emission reductions may not be achievable through the application of ACI with baghouse, especially considering the potential for emissions variability.

[1631] Commenters specifically discussed ACI with a baghouse for potential control of D/F, PAH, and Hg from Sinter/Recycling Plants. Ultimately it is not well understood what level of D/F, PAH, and Hg control efficiencies are achievable in practice, given dilute sinter/recycling plant exhaust concentrations of these pollutants and no site-specific testing is available to assess the effectiveness and feasibility of ACI. Inlet concentrations of D/F, PAH, and Hg are so low that guaranteeing any control efficiency using ACI is questionable at best. For example, the Indiana Harbor East (IHE) sinter/recycling plant test in April 2012 achieved an average D/F TEQ concentration of 4.89E-07 µg/dscm over four runs Based on vendors, the advertised D/F exit concentration from control equipment is 1E-04 µg/dscm TEQ. (Primetals Technologies Austria GmbH, Maximized Emission Reduction of Sintering (2020), https://www.primetals.com/fileadmin/user_upload/content/01_portfolio/1_ironmaking/sinter-plant/MEROS-2.pdf) Therefore, emission rates are already below concentrations that can be achieved by emission control vendors and additional emission reductions may not be achievable, especially since D/F emission are on the magnitude of approximately 3 grams or less per year per sinter/recycling plant. The dilute nature of the D/F compounds in the sinter/recycling plant exhaust would lead to limited pollutant adsorption rates to the activated carbon, potentially rendering the controls infeasible.

[1631] Commenters specifically discussed ACI or other CS_2/COS technologies for potential control of CS_2 and COS for Sinter/Recycling Plants. The EPA assumes that ACI would control COS emissions by 85 percent but this is unproven. (EPA [2019] AMOS Memo) COS is not a commonly controlled pollutant for industrial waste gases, nor are there readily available pollution controls for COS from II&S sinter/recycling plants. Traditional methods of COS or CS_2 removal are through amine absorption and stripping of pre-combustion fuel gas or hydrolysis. These technologies are maturely applied in the petrochemical and natural gas industries. (Pengfei L, Guangchun Wang, Yuan Dong and Yuqun Zhuo Yaming Fan, A Review on Desulfurization Technologies of Blast Furnace Gases, at 191 (Mar. 29, 2022)) However, they are not applicable or technically feasible, nor is industry aware of any demonstrations of ACI or other CS_2/COS technologies used in the petrochemical or natural gas industries in similar installations to II&S sinter/recycling plants or post-combustion flue gas treatment. In other words, no technically

feasible control options exist for the control of COS and CS_2 in a dilute post-combustion flue gas stream from a sinter/recycling plant of which Industry Commenters are aware. In theory, thermal oxidation of COS/CS_2 to SO_2 may be technically feasible, but this is very energy intensive and generates collateral emissions. Therefore, the proposed standards may be unachievable for COS/CS_2 given emissions variability without significant environmental impacts (i.e., major increases in energy use from thermal oxidation).

Response 4:

As explained in the preamble and in responses above, EPA is finalizing limits for PAHs, D/F and mercury that are based on installation and operation of ACI. However, given the relatively low concentrations, EPA only assumed 70 percent reduction for PAHs and D/F and about 50 percent reduction for Hg (as compared to the MACT floor UPL) to derive the emissions limits in this final rule. In contrast, in some other rules EPA has estimated reductions of up to 90 percent by installing and using ACI.

Comment 5:

[1631] Commenters stated they reviewed DSI with a baghouse for meeting the proposed new HAP limits and have concerns about the technology's feasibility and efficacy for meeting the limits. Commenters specifically discussed this control option for potential control of HCl from BF Stoves. Blast furnace stove HCl exhaust concentrations are very dilute (maximum performance test run results across II&S facilities of 0.62 ppmvd). Therefore, industry is concerned that any application of HCl controls such as DSI with a baghouse would not be able to sufficiently control emissions below the proposed limits with the potential emissions variability. High control efficiencies (e.g., 90 percent) (Sargent & Lundy, LLP, IPM Model – Updates to Cost and Performance for APC Technologies; Dry Sorbent Injection for SO2/HCl Control Cost Development Methodology: Final, at 1, 3 (April 2017) ("EPA Cost Methodology"), https://www.epa.gov/sites/default/files/2018-05/documents/attachment_55_dsi_cost_development_methodology.pdf) for HCl may be achievable with DSI and a fabric filter when contaminant concentrations are much higher such as medical waste incinerators (HCl inlet concentrations ranging from 575 to 1,250 ppm). (Gerald Hunt et al., Utilizing Dry Sorbent Injection Technology to Improve Acid Gas Control: Paper #2, 4 at tbl. 1 (Oct. 20-22, 2015), https://www.sorbacal.com/sites/default/files/downloadcenter/utilizing_dry_sorbent_injection_technology_to_improv e_acid_gas_control.pdf) Vendors have stated that the lowest target concentration for DSI for HCl would be 0.5 ppm to 1 ppm. This means that the existing HCl concentrations are already at or below the lowest level of outlet concentrations that can be achieved by DSI. Further, the existing HCl concentrations are below the discharge limits for continuous pickling lines required by 40 C.F.R. section 63.1158(a)(1)(i) (40 C.F.R. Part 63, subpart CCC). Therefore, any limit that would result in controls lower than those under the Steel Pickling NESHAP regulations would be unreasonably stringent. Further, the dilute HCl concentrations in exhaust from blast furnace stoves may result in inconsistent and unpredictable control efficiencies. This is concerning because blast furnace stoves will have emissions variability and the need for compliance buffers. Site-specific testing would be needed to test DSI or other HCl control technologies to vet them as possible controls. Therefore, the EPA may be proposing unachievable standards for blast furnace stove HCl emissions.

[1631] Commenters specifically discussed DSI with a baghouse for potential control of HCl from BF Casthouse Control Devices. Casthouse HCl exhaust concentrations are very dilute (maximum performance test run results across II&S facilities of 3.2 ppmvd). Therefore, there are serious concerns that any application of HCl controls such as DSI with a baghouse would not be able to sufficiently control emissions below the proposed limits, given the potential emissions variability. High control efficiencies (e.g., 90 percent) (EPA Cost Methodology, at 1, 3) for HCl may be achievable with DSI and a fabric filter when contaminant concentrations are much higher such as medical waste incinerators (HCl inlet concentrations ranging from 575 to 1,250 ppm). (Gerald Hunt et al., Utilizing Dry Sorbent Injection Technology to Improve Acid Gas Control: Paper #2, 4 at tbl. 1 (Oct. 20-22, 2015), https://www.sorbacal.com/sites/default/files/downloadcenter/utilizing_dry_sorbent_injection_technology_to_improv e_acid_gas_control.pdf) Vendors have stated that the lowest target concentration for DSI for HCl would be 0.5 to 1 ppm. This means that the existing HCl concentrations are essentially at the lowest level of outlet concentrations that can be achieved by DSI. Further, the existing HCl concentrations are below the discharge limits for continuous pickling lines required by 40 CFR 63.1158(a)(1)(i). Therefore, any limit that would result in controls lower than those under the Steel Pickling NESHAP regulations are unreasonably stringent. The dilute HCl concentrations in the exhaust from casthouses are expected to result in inconsistent and unpredictable control efficiencies. This is concerning because casthouses will have emissions variability and the need for compliance buffers. Site-specific testing would be needed to test DSI or other HCl control technologies to vet them as possible controls. Therefore, the EPA may be proposing unachievable standards for casthouse HCl emissions.

[1631] Commenters specifically discussed DSI with a baghouse for potential control for HCl from BOPF Primary Control Devices. BOPF Primary Control Device HCl exhaust concentrations are very dilute (maximum performance test run results across II&S facilities of 0.43 ppm). Therefore, industry is concerned that any application of HCl controls such as DSI with a baghouse would not be able to sufficiently control emissions below the proposed limits with the potential emissions variability. High control efficiencies (e.g., 90 percent) (EPA Cost Methodology, at 1, 3) for HCl may be achievable with DSI and a fabric filter when contaminant concentrations are much higher such as medical waste incinerators (HCl inlet concentrations ranging from 575 to 1,250 ppm). (EPA Cost Methodology, at 1, 3) Vendors have stated that the lowest target concentration for DSI for HCl would be 0.5 ppm to 1 ppm. This means that the existing HCl concentrations are already below the lowest level of outlet concentrations that can be achieved by DSI. Further, the existing HCl concentrations are below the discharge limits for continuous pickling lines required by 40 CFR 63.1158(a)(1)(i). Therefore, any limit that would result in controls lower than those under the Steel Pickling NESHAP regulations are unreasonable stringent. The dilute HCl concentrations in the exhaust from BOPF Primary Control Devices are expected to result in inconsistent and unpredictable control efficiencies. This is concerning because BOPFs will have emissions variability and the need for compliance buffers. Site-specific testing would be needed to test DSI or other HCl control technologies to vet them as possible controls. Therefore, the EPA may be proposing unachievable standards for BOPF HCl emissions.

[1631] Commenters specifically discussed DSI with a baghouse for potential control of HCl and HF from Sinter/Recycling Plants. Sinter/recycling plant HCl and HF (acid gases) exhaust concentrations are very dilute (maximum performance test run results across II&S facilities of 2.53 ppmvd and 0.08 ppm respectively). Therefore, industry is concerned that any application of acid gas controls such as DSI with a baghouse would not be able to sufficiently control emissions below the proposed limits with the potential emissions variability. High control efficiencies (e.g., 90 percent) (EPA Cost Methodology, at 1, 3) for acid gases may be achievable with DSI and a fabric filter when contaminant concentrations are much higher such as medical waste incinerators (with HCl inlet concentrations ranging from 575 to 1,250 ppm). (Gerald Hunt et al., Utilizing Dry Sorbent Injection Technology to Improve Acid Gas Control: Paper #2, 4 at tbl. 1 (Oct. 20-22, 2015), https://www.sorbacal.com/sites/default/files/downloadcenter/utilizing_dry_sorbent_injection_technology_to_improv e_acid_gas_control.pdf) Vendors have stated that the lowest target concentration for DSI for HCl would be 0.5 to 1 ppm. This means that the existing HCl concentrations are essentially at the lowest level of outlet concentrations that can be achieved by DSI. Further, the existing HCl concentrations are below the discharge limits for continuous pickling lines per 40 CFR 63.1158(a)(1)(i). Therefore, any limit that would result in controls lower than those under the Steel Pickling NESHAP regulations are unreasonably stringent. The dilute HCl/HF concentrations in exhaust from II&S sinter/recycling plants may result in inconsistent and unpredictable control efficiencies. This is concerning because II&S sinter/recycling plants need to account for emissions variability and compliance buffers. Site-specific testing would be needed to test DSI or other acid gas control technologies to vet them as possible controls. Therefore, the EPA may be proposing unachievable standards for sinter/recycling plant acid gases.

Response 5:

We are promulgating MACT Floor limits for HCl and surrogate HCl limits for HF based on available data using the UPL methodology which accounts for variability and therefore we expect all facilities will be able to meet the MACT limits based on current controls. So, we do not expect the need for DCI on any units.

Comment 6:

[1631] Commenters stated they reviewed catalytic oxidation and regenerative thermal oxidation for meeting the proposed new HAP limits and have concerns about their feasibility and efficacy for meeting the limits. Commenters specifically discussed these control options for potential control of THC from BF Stoves. Catalytic oxidation is not considered to be feasible for the stoves because the THC compound speciation is not well understood for proper catalyst formulation, and there is potential for catalytic poisoning from contaminants in the blast furnace gas. An RTO could be used to provide supplemental THC control. However, separate vendors stated that the lowest guarantees they typically can provide are 20 ppmv THC as methane or 5 ppmv THC as propane. (Pursuant to information provided by control equipment vendors on telephone calls.) The highest single run THC concentration from stove performance testing was 37.9 ppmvd THC as propane. However, performance test results vary significantly with other performance test results closer to 1 ppmvd THC as propane. Therefore, the observed THC

emissions are close to, or at times below capture limitations for THC. Further, the THC emissions variability from the stoves is unpredictable due to the complex operation of the blast furnace, raw material variability, etc. Therefore, the EPA may be proposing unachievable limits considering the potential for emissions variability. The low concentration levels of the THC emissions would lead to a lack of reliable control efficiency, potentially rendering the controls infeasible.

[1631] Commenters specifically discussed catalytic oxidation and use of an RTO for potential control of THC from BF Casthouse Control Devices. Catalytic oxidation is not considered feasible for the casthouse because the THC compound constituent speciation is not well understood for proper catalyst formulation, and there is potential for catalytic poisoning from contaminants in the blast furnace Casthouse exhaust. An RTO could be used to provide supplemental THC control. However, separate vendors have stated that the lowest guarantees they typically can provide are 20 ppmv THC as methane or 5 ppmv THC as propane. (*id*.) The highest single run THC concentration from BF Casthouse control device performance testing was 13.3 ppm THC as propane. The highest observed THC concentrations are essentially at the capture limitations for THC. Further, the THC emissions variability from the casthouses are unpredictable due to the complex operation of the blast furnace, raw material variability, etc. With the BF Casthouses Control Devices as well, the low concentration levels of the THC emissions would lead to a lack of reliable capture efficiency, potentially rendering the controls infeasible.
[1631] Commenters specifically discussed catalytic oxidation and use of an RTO for potential control of THC from BOPF Primary Control Devices. Catalytic oxidation is not considered to be feasible for the BOPFs because the THC compound speciation is not well understood for proper catalyst formulation and there is potential for catalytic poisoning from contaminants in the BOPF exhaust gas. An RTO could be used to provide supplemental THC control. However, separate vendors stated that the lowest guarantees they typically can provide are 20 ppmv THC as methane or 5 ppmv THC as propane. (*id*.) The highest single run THC concentration from stove BOPF performance testing was 13.3 ppm THC as propane. The highest observed THC concentrations are essentially at capture limitations for THC. In addition, dust carry over from the BOPF particulate control device may plug a regenerative heat exchanger, needed to maximum heat transfer efficiency for waste gas reheat. Further, the THC emissions variability from the BOPFs are unpredictable due to the complex operation of the BOPFs, raw material variability, open versus closed hood design, and scrap material variability. Achievability of the proposed limits is not known, especially considering the potential for emissions variability.

Response 6:

We are promulgating MACT Floor limits for THC based on available data that represent current performance using the UPL methodology which accounts for variability and therefore we expect all facilities will be able to meet the MACT limits based on current controls. Based on the data we have, we estimate that all facilities can meet the THC limits without any additional controls.

Comment 7:

[1631] Commenters stated they reviewed windbox gas recirculation for meeting the proposed new HAP limits at sinter/recycling plants and have concerns about the technology's feasibility

and efficacy for this application. According to the EPA, D/F emissions have been controlled by European sinter plants using various forms of windbox gas recirculation. (Memo from Donna Lee Jones, OAQPS/US EPA; Brian Dickens and Patrick Miller, EPA Region V/US EPA and, Gabrielle Raymond, RTI International, to integrated Iron and Steel (II&S) Residual Risk and Technology Review (RTR) Project File, on "Technology Review for the integrated Iron and Steel NESHAP," at 20-21 (March 1, 2020)) Windbox gas recirculation technologies would require major modifications to the existing sinter/recycling plant waste gas stream, ducting arrangements, etc. It is unknown if these techniques could be applied to U.S. II&S sinter/recycling plants without inhibiting production rate or sinter quality. Commenters stated, as the EPA explains, "[a]lthough the literature shows that there are many techniques to control dioxin/furan emissions from sinter/recycling plants, with some techniques more developed than others, but the successful application of these techniques to U.S. II&S facilities is unknown." (*Id*. at 21) Therefore, with the control technology unknowns and limitations for HAPs from II&S sinter/recycling plants, achievability of the proposed limits is not known.

Response 7:

This comment relates to things we discussed in the 2019 RTR proposed rule and 2020 RTR final rule preambles. This comment is not relevant for this final rule.

Comment 8

[1631] Commenters noted there are several adverse environmental and energy impacts associated with DSI with a polishing baghouse to control HCl and HF that industry evaluated including:

- Incremental electricity for a new polishing baghouse and fans, resulting in collateral combustion emissions from power generation sources;
- Solid waste disposal of spent sorbent;
- Compressed air for baghouses; and
- Make-up water for quenching hot exhaust, where applicable.

[1631] Commenters noted there are several adverse environmental and energy impacts associated with RTO's to control COS, CS_2, and THC that industry evaluated including:

- Incremental electricity to overcome the pressure drop from RTOs;
- Natural gas combustion for flue gas reheat to reach oxidation temperatures, resulting in collateral combustion emission of criteria pollutants, GHG, and HAPs;
- Significant industry wide impacts;
- Electrical demand increase of 82MW; and
- Natural gas combustion increase of approximately 3,800 MMBtu/hr for RTO reheat, contrary to decarbonization goals.

Response 8:

We are promulgating MACT Floor limits for these HAP based on available data that represent current performance using the UPL methodology which accounts for variability and therefore we expect all facilities will be able to meet the MACT limits based on current controls. The MACT

floor is the minimum stringency level allowed for the standards regardless of costs. Nevertheless, based on the data we have, we estimate that all facilities can meet these limits without any additional controls. For more details see the preamble and the technical memorandum titled: *Maximum Achievable Control Technology Standard Calculations, Cost Impacts, and Beyond-the-Floor Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF,* which is available in the docket for this action.

Comment 9:

[1631] Commenters stated the proposed section 112(d)(6)-based revisions to the existing emission standards for BOPF shop and BF casthouse fugitive emissions are not required by statute or by the *LEAN* decision, and are otherwise unwarranted, inappropriate, and flawed. Commenters stated that section 112(d)(6) does not support the proposal to tighten opacity limits for BOPF shops and BF casthouse fugitives and new work practice standards for BOPF shops.

[1631] Commenters stated the proposed BOPF shop work practice standards are unnecessary, inappropriate, and overly prescriptive and would impose exorbitant costs to meet 100 percent of the time. The rulemaking record does not demonstrate that revision of the BOPF shop opacity standards and imposition of work practices are "necessary" under section 112(d)(6), and there have been no "developments in practices, processes, and control technologies" that the EPA has taken into account in the Agency's determination. Indeed, the EPA has not identified any developments that justify ratcheting the opacity standard to one that is four times lower than the current standard. While the EPA has taken the position that a development may include improved performance under an existing standard, the record here does not demonstrate improved performance. A 5 percent, 3-minute average, opacity standard is not being met even by the top performing source, much less in a manner that reflects a "development" that warrants revision. The EPA's existing AMOS determination establishes that the revision is not necessary.

[1631] Commenters stated the EPA does not identify any developments. The EPA typically considers any of the following to be a "development" under section 112(d)(6):

- Any add-on control technology or other equipment that was not identified and considered during development of the original MACT standards;
- Any improvements to the add-on control technology or other equipment that was identified and considered during development of the original MACT standards that could result in additional emissions reductions;
- Any work practice or operational procedure that was not identified or considered during development of the original MACT standards;
- Any process change or pollution prevention alternative that could be broadly applied to the industry and that was not identified or considered during development of the original MACT standards; and
- Any significant changes in the cost (including cost effectiveness) of applying controls, including controls the EPA considered during the development of the original MACT standards. (88 FR 49409-49410)

[1631] Commenters stated the technology review that concluded in 2020 considered opacity levels that existing BOPF shops and BF casthouses were achieving and also the types of work

practices already in use. In explaining the Agency's conclusion that it was not necessary to issue a lower opacity limit than the current BOPF shops and BF casthouse fugitives standard of 20 percent, or to issue new work practices, the EPA stated that there were "significant uncertainties in the technical assessment," including estimates of the baseline emissions and estimated HAP reductions, the costs of the work practices, and the effect that the work practices could have on facility operations, economics, and safety.

[1631] Commenters stated following the Section 114 information collection requests in 2022 and 2023 and upon "further review of the data and analyses" that had been available during the 2020 risk and technology review, the EPA has reversed position. Commenters stated the EPA now suggests that, based on the "new information," there has been "a development in practices, processes and control technologies," and the Agency is now "updating" (88 FR 49402) the 2020 technology review. The result is to drastically ratchet down the current 20 percent opacity limit established under Subpart FFFFF for BOPF shops and BF casthouses to 5 percent plus impose a series of specific work practices for BOPF shops that the EPA claims, contrary to its determination in 2020, are based on the conclusion that these drastic changes are "feasible and cost effective." (88 FR 49404, 49413) The EPA is wrong.

[1631] Commenters stated common sense dictates that the record should contain new information that was unavailable in 2020 given the EPA's position that its information collection requests over the last two years had eliminated its prior concerns with "significant uncertainties" related to (1) emissions data, (2) costs, and (3) effects on operations, economics, and safety. Certainly if this new information eliminated those "significant" uncertainties, it must be robust, credible, reliable, detailed, and representative. Unfortunately, the record here does not reveal new information on emissions and emission reductions, new emission factors, new cost and economic impact data, or new information as to why there are no longer concerns for potential impacts on operations and safety.

[1631] Commenters stated these BOPF shop operations have been in place and subject to opacity limits and Method 9 visible emissions (VE) testing requirements under this NESHAP for decades. Yet, the EPA only reviewed Method 9 data gathered under the 2022 ICR, which included limited testing over just a few days in 2022. Industry also provided a wealth of data dating back to 2019 which the EPA did not include in the Agency's analysis. [For example, for BOPF shops, the EPA stated in the 2023 UFIP Memo that "data was evaluated and reviewed from 37 of the opacity tests for BOPF Shops presented in PDF files or Excel spreadsheets." This is only 3 percent of the 1,217 tests provided to the EPA by Industry. In addition, the reviewed 37 tests were only at four facilities rather than the six for which data were provided. Furthermore, although the EPA states that 37 tests were reviewed, Table B-1 of that document indicates that only the 2022 data (12 tests) were used in developing proposed limits. (2023 UFIP Memo at page 6).] This broader dataset includes thousands of historical Method 9 tests that were not considered in the EPA's rulemaking and demonstrate that the values reflected in the relatively small number of test reports that the EPA reviewed is not representative of the full range of opacity expected from UFIP sources. The portion of the Method 9 VE tests the EPA reviewed was only 1 percent of BOPF shop tests that industry submitted to the Agency and 2 percent of BF casthouse Method 9 VE tests submitted. [Although the EPA provided some summary tables of historical Method 9 testing, the limited statistical review used to set proposed limits was only

based on tests provided in Excel spreadsheets. If handwritten test reports were provided by Industry, which is typical for a Method 9, the EPA indicated the data in those reports were not considered. As such, the EPA appears to have reviewed 12 of the 1,217 provided tests for BOPF shops (1 percent) and 41 of the 1,747 provided tests for BF casthouses (2 percent).] Industry also submitted historical data for two additional BOPF shops and three additional BF casthouses that did not have testing requirements under the 2022 ICR. The EPA did not consider information regarding these shops at all in the Agency's analysis.

[1631] Commenters noted the EPA stated that, during 2020 RTR, the Agency had very limited data regarding the opacity levels being achieved as well as very little data regarding the types of work practice standards being applied by BOPF shops and BF casthouses, which was resolved by the 2022 ICR. (88 FR 49413) Despite the EPA having had access to decades' worth of data, the Agency only relied on a snapshot of information from 2022 and assumed that the industry could all of a sudden meet lower limits on a long-term basis even though the data do not support that assumption. [2023 UFIP Memo at page 6 ("Several of the facilities also submitted 'previous' opacity data files per our recent 114 collection, but not all of the previous data was evaluated due to the large number of previous opacity data files (most of which were PDF files and would take a long time to pull data from.")] It therefore makes no sense for the EPA to claim the Agency had insufficient data in 2020 and now that the Agency has a handful of new tests, the new data constitute a development and are somehow sufficient enough to use to establish significantly lower opacity standards. This is not a development. And, in fact, the data do not support lowering the opacity standards as the EPA claims. In 2003, the EPA was careful to consider as many test reports as possible based on operations over the course of a full year to account for seasonal and operational variability. (68 FR 27654-655) When now deciding to change the 2003 standards, the EPA seems content to rely on testing taken over the course of only a day or two per shop (and not at every shop, even though there are only 11 total).

[1631] Commenters stated to the extent information supporting the EPA's analyses exists, it needs to be included in the rulemaking docket and subject to comment, pursuant to CAA Section 307(d) because such information and analyses are clearly of central relevance to the requirements the EPA proposes. The current record's blanket assertions do not meet the section 307(d) requirements to show the methodology used to develop the rule. Indeed, the information the regulated companies provided to the EPA in 2022 and 2023 supports a conclusion contrary to the EPA's proposed approach—showing the proposed opacity limits are not currently being achieved and would not be achievable, at least without significant capital expenditures.

Response 9:
As described in the Federal Register Notice (i.e., preamble) for this final rule, and in other responses to comments provided above, to address the claims and concerns that the proposed limits would be excessively burdensome (for example the comment that the 5 percent limit might require construction of full enclosures and additional control devices), and after further review of available data, we removed the proposed opacity limits for BF casthouses and BOPF shops. We are still however finalizing work practices for BOPF shops. Based on evaluation of available opacity data and ability of facilities to implement relatively low cost work practices to help minimize emissions, we conclude that facilities will be able to comply with these new work practices without the need for any excessive capital expenditures. We conclude that with these

work practices, no facility will need to construct additional enclosures or additional control devices to comply. We expect the capital and annual costs to comply with these work practice standards will be quite reasonable. The available data and estimated costs are described in the Federal Register Notice (i.e., preamble) for this final rule and in the technical memo titled: Unmeasured Fugitive and Intermittent Particulate Emissions and Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF (UFIP Memo), which is available in the docket for this final rule.

Comment 10:

[1592] Commenters stated the EPA should reconsider and revise the finding of "acceptable risk" in the 2020 section 112(f)(2) residual risk and technology review. Section 112(f)(2) of the CAA requires the EPA, after setting the MACT technology standards under section 112(d), to determine whether additional standards are needed to provide an ample margin of safety to protect public health. The EPA conducted this "residual risk review" in 2020. (85 FR 42074) [1592] Commenters stated because the emission standards proposed do not meet the section 112(d) standard, the EPA must revise this proposed rule. After that, the EPA needs to re-conduct the section 112(f)(2) residual risk review to consider all HAPs emitted by integrated iron and steel manufacturing facilities, at the levels these facilities actually emit the HAPs, and revise the Agency's finding of acceptable risk. Congress has mandated periodic review of emission standards to ensure that the Section 112 standards are met. The EPA is "not constrained by past, potentially flawed and underinclusive Agency action." (*LEAN*, 955 F.3d at 1097) The EPA is aware that previous ambient air monitoring studies at such facilities have shown harmful concentrations of multiple pollutants at, and beyond, the facility fenceline. Further, the EPA has failed to require contemporary emissions control technologies. Risks from toxic emissions from the nine integrated iron and steel manufacturing facilities, some of which have been operating—and contaminating local communities—for over 100 years, are not acceptable. Because more emissions reductions are achievable and are needed to protect public health, the CAA mandates more stringent standards.

[1562; 1627] Commenters encouraged the EPA to reconsider the 2020 finding of acceptable risk in the risk and technology review. Commenters noted that in the preamble, for fenceline monitoring conducted based on the section 114 collection, the monitored emissions for all the HAP metals were many magnitudes higher than the modeled emissions. For example, chromium was 28 times higher than the modeled emissions. This pattern of fenceline monitoring was true of lead and arsenic at 3 times and 6 times greater respectively. In addition, lead was not considered in the previous risk analysis, along with the new information on the concentrations of HAP metals for these sources, the EPA should consider re-evaluating the risk remaining from these sources.

Response 10:

We are not revisiting the CAA section 112(f) review in this action. The CAA section 112(f) review was completed in 2020. Nevertheless, we do acknowledge that, in any exercise intended to characterize emissions and risks, there are arguments to be made that emissions, health based risk metrics, and exposure scenarios provide enough uncertainty that it could be argued that risks were either underestimated or overestimated for any given situation. Although we always intend to use our best available data to conduct the risk assessment consistent with our protocols and

peer-reviewed guidance, we acknowledge that it is sometimes difficult to resolve differences between what we measure and what we expect from our modeling.

Nevertheless, we did propose and are finalizing fenceline monitoring work practice standards for chromium pursuant to our CAA section 112(d)(6) technology review that will limit concentrations of metal HAP at the facility fencelines to the levels expected from our post control emission estimates, limiting the uncertainty associated with emission estimation and dispersion modeling. Therefore, implementation of these standards will ensure that we have, in fact, achieved control of HAP to levels we expect to be achieved under the technology review and MACT standards finalized in this action.

Comment 11:

[1721] Commenters stated although DCOT is a technological upgrade of the decades-old Method 9, the fundamental approach is to perform Method 9 but add circuitry; the EPA should consider technologies that would more comprehensively use modern technology to achieve the goals of record preservation, accuracy, and accountability.

[1721] Commenters stated given DCOT's similarity to Method 9, it should be noted that they both suffer a minor flaw of particular relevance to the II&S NESHAP: Method 9 was designed for a likely rounded plume emanating from an identifiable point or stack. It's not clear a camera and software under the same guidelines, time-of-day limitations, siting limitations, etc., reflects what is possible. The EPA should examine recent research on fully automated opacity measurements (Oscar D. Pedrayes et al., Fully automated method to estimate opacity in stack and fugitive emissions: A case study in industrial environments, 170 Process Safety & Envtl. Protection 479 (2023)) and open-path laser advancements. (EPA OAQPS, EPA Handbook: Optical and Remote Sensing for Measurement and Monitoring of Emissions Flux of Gases and Particulate Matter, EPA 454/B-18-008 (Aug. 2018))

Response 11:

The EPA agrees that the technologies presented in *Fully automated method to estimate opacity in stack and fugitive emissions: A case study in industrial environments* and the EPA Handbook: Optical and Remote Sensing for Measurement and Monitoring of Emissions Flux of Gases and Particulate Matter are promising approaches. At this time however these technologies are still experimental in nature and are not commercially available techniques, and EPA not adding additional methodologies for demonstrating compliance with the opacity standard.

Comment 12:

[1721] Commenters stated industry opposition to camera-based opacity measurements relies on an uncomfortably select reading of scientific literature; an industry-wide aversion to voluntary compliance with Subpart FFFFF, and a refusal to even imagine having a camera on-site; the EPA should view industry assertions skeptically.

[1721] Commenters stated in Cleveland Cliffs' cover letter to its ICR responses, the company cited the joint comments of US Steel and AISI to the 2019 proposed II&S NESHAP revisions to support the assertion that "Method Alt-082 [based on ASTM D7520- 09] should be removed as an opacity measurement method because of documented accuracy concerns with fugitive

sources, as well as issues with the functionality, availability, and application to II&S sources of the camera systems." (E-mail: Submitting Cleveland Cliffs Middletown Works Enclosure 1 Questionnaire response, EPA-HQ-OAR-2002-0083-0793 (June 3, 2022)) Regarding those "accuracy concerns," the 2019 US Steel-AISI comments mentioned "an important technical paper that . . . examine[d] the use of digital cameras for measurement of fugitive emission opacity [and] that documented statistically significant field results that were inconsistent and greater than those reported by Method 9," but the citation only pointed to comments AISI made concerning the 2016 Ferroalloys Production NESHAP reconsideration. (Comment submitted by Paul Balserak, Vice President of Environment, AISI and Dave Hacker, Senior Counsel for Environmental, United States Steel Corporation, EPA-HQ-OAR-2002- 0083-1059 (Nov. 7, 2019)) The Ferroalloys comment revealed that AISI was referring to a 2007 paper titled Fugitive Emissions Opacity Determination Using the Digital Opacity Compliance System (DOCS) by previously lauded McFarland et al. (Comment submitted by Paul Balserak, Vice President, Environment, American Iron and Steel Institute (AISI), EPA-HQ-OAR-2010-0895-0334, at 7-8 (Aug. 26, 2016)) AISI correctly quoted the paper's conclusions concerning results that were inconsistent and greater than those reported by Method 9, but AISI failed to mention factors rendering this study of marginal or questionable value. First, the study assessed the opacity of a plume at distances of 50, 100, 150 feet downwind from a fog machine source at ground level held at a constant 60 percent maximum output. (Michael J. McFarland et al., Fugitive Emissions Opacity Determination Using the Digital Opacity Compliance System (DOCS), 57 J. of the Air & Waste Mgmt. Ass'n, 1317, 1319-20 (Nov. 2007)) The observers further varied their horizontal distance from plume between 30 and 300 feet perpendicular to the prevailing wind direction. (*Id.*) This is a novel set-up at best, is not how certification for Method 9 or DCOT would look, and might not match many scenarios at an II&S facility. Second, the authors explained, "[o]f the 100 fog plumes scheduled for opacity analysis, only 38 opacity observations were deemed valid because of the adverse effects of localized wind shear on particle dispersion and transport." (*Id.*, at 1324) While some of the ultimate conclusions in the study were statistically significant, 38 opacity observations in challenging, potentially inapplicable conditions cannot justify giving this paper– labeled "the McFarland Report" in 2022 comments – the mythic status it has received or wheeling it out as proof of anything other than the need for additional research. (Comment submitted by American Iron and Steel Institute (AISI), Steel Manufacturers Association (SMA), and Specialty Steel Industry of North America (SSINA), EPA-HQ-OAR-2002-0049-0097 (Aug. 15, 2022))

[1721] Commenters stated the studies discussed in a separate section of their comment letter do not "prove" DCOT is perfect, but the research appears to establish through years of work and hundreds of observations the strengths and weakness of the camera-based opacity approach in general. In addition, the troubling "McFarland Report" existed when the EPA and ATSM established the DCOT standard. Suggesting 38 dusty, wind-blown plume readings from 2007 are significant is a stretch.

[1721] Commenters stated it is not clear what is driving this unwavering and steadfast opposition to adopting a potentially useful, modern technology, but from a community perspective, the arguments feel disingenuous. It feels like these arguments are being driven by an industry with an awful compliance history that is loath to have any image-recording device near its questionably compliant facilities. The Regulatory Impact Analysis for the proposed NESHAP

changes pointed out, "[t]here are currently eight II&S manufacturing facilities in the United States" (Document submitted to conclude E.O. 12866 review - Integrated Iron and Steel RIA, Docket EPA-HQ-OAR-2002-0083-1452, at section 2.6 (June 2023)) and from August 2015 through December 2022, the US Department of Justice lodged four Consent Decrees in three federal District Courts involving seven of the eight remaining II&S facilities at least partially due to noncompliance with the II&S NESHAP.
<Table with Ultimate Parent Company, Facility, Court, Case No., Decree Entered>

[1721] Commenters stated that is flatly unacceptable. In no overwise legal industry should 7/8th of its facilities require Department of Justice intervention before the companies take environmental compliance requirements seriously. Commenters stated it is hard to imagine such a compliance disaster happening if cameras recorded compliance testing. As the EPA finalizes the revisions to this NESHAP, decisionmakers should consider these "factors" as things "to take into account . . . to take into consideration as an existing element to notice . . . or to make allowance for," as the *LEAN* opinion urged the EPA to do. (*Louisiana Envt'l Action Network v. EPA*, 955 F.3d 1088, 1098 (D.C. Cir. 2020) ("*LEAN*"))

Response 12:

The EPA acknowledges the commenters support for DCOT. The EPA did not propose to remove the applicability of ASTM D7520-16, nor are we finalizing the removal of applicability of the option. No changes are necessary as a result of this comment.

Comment 13:

[1721] Commenters stated the EPA must require facilities to install cameras for emission opacity measurement and compliance, but should also examine options for adjusting standards and/or methods to best utilize the technology available. Commenters stated the proposed amendments to the National Emission Standards for Hazardous Air Pollutants ("NESHAP") for integrated iron and steel manufacturing facilities will lower opacity limits for BOPF and casthouse fugitive emissions, increase the frequency of required observations for those new limits, and add opacity limits for five previously unregulated sources of fugitive emissions. (88 FR 49402, 49405) These changes will protect public health by reducing exposure to hazardous air pollutants ("HAP" or HAPs") that comprise a portion of those fugitive emissions. (*Id*.) To ensure and maximize the anticipated benefits, the EPA must require opacity measurements be conducted via DCOT. It appears to be a viable technology with distinct and modern advantages over Method 9, the 'scientific' basis for industry opposition to it is flawed, the affected facilities' compliance history suggests a possible bias against any on-site camera under any circumstances, and requiring camera based measurements could have a beneficial impact on further development of the technology, public transparency, cost to industry, worker safety, and future EPA regulations. Still, practical barriers exist that the EPA must address.

Response 13:

The EPA disagrees that ASTM D7520-16 should be required for demonstrating compliance with the opacity standard. The reasons for not requiring the use of ASTM D75220-16 are discussed in detail in the *Summary of Public Comments and Responses for Risk and Technology Review for Integrated Iron and Steel Manufacturing Facilities* (EPA-HQ-OAR-2002-0083-1100) Section 6

in the response to comment 7. The EPA is making no changes to the applicability of ASTM D7520-16 in this rulemaking.

Comment 14:

[1721] Commenters stated both DCOT and Method 9 are sound approaches with benefits and limitations, but the EPA must more purposefully back digital opacity technology for it to succeed. The EPA promulgated the first non-Ringelmann version of Method 9 on November 11, 1974. (Standards of Performance for New Stationary Sources, 39 FR 39872, Nov. 12, 1974) That rule introduced concepts still familiar today to trained visual emissions observers: 24 readings taken at 15-second intervals, the sun within a 140° sector to the observer's back, and plumes being read at a point where water does not exist in a condensed form. (39 FR 39873, Nov. 12, 1974; Method 9 section 2 (2017)). The ASTM D7520-16 DCOT standard (The most current version of this standard is ASTM D7520-16r23, denoting that it was revised and reapproved in 2023 (published March 1, 2023), https://www.astm.org/d7520-16r23.html) is identical in nearly all respects to Method 9 except that the observer is replaced with a camera and the images produced are analyzed by both software and an operator.

[1721] Commenters stated while a present barrier to wide adoption and use of DCOT might be the software and/or software vendor (the commenters discuss this later in their letter), that does not invalidate the work – largely 2003 through 2010 – that went into developing a digital approach to measuring opacity. Three studies published 2004 through 2006 by parties working under the U.S. Department of Defense reported:

- Cost savings in the military facility setting and valid results when "contrast is expected to be good, where weather is most often clear, and where expected opacities are low." (Envtl. Security Tech. Certification Program (ESTCP), U.S. Dept. of Defense, An Alternative to EPA Method 9-Field Validation of the Digital Opacity Compliance System (DOCS): Cost and Performance Report (CP-0119), at section 1.5 (Nov. 2004), NTIS No. ADA603745. See attached.);
- Savings, achieving the Method 9 accuracy standard when the technology was employed under blue sky weather conditions, and inconsistency on par with Method 9 observer inconsistency when evaluated under adverse weather conditions in field demonstrations from 2001 through 2005. (Steve L. Rasmussen & Daniel A. Stone, A.F. Res. Laboratory, An Alternative to EPA Method 9-Field Validation of the Digital Opacity Compliance System (DOCS): Final Report for ESTCP Project No. CP-200119 (AFRL-ML-TY-TR-2005-4569), at sections 4, 6.2 (Mar. 15, 2005), NTIS No. ADA436252. See attached.); and
- Nearly no discernable difference between Method 9-certified human observers and a visible opacity monitoring system consisting of a conventional digital camera and a separate computer software application for plume opacity determination in a long-term study involving observations at 241 regulated facilities – there was at worst, the study found, a 1.12 percent positive bias in the camera method. (Steve L. Rasmussen & Daniel A. Stone, A.F. Res. Laboratory, An Alternative to EPA Method 9-Field Validation of the Digital Opacity Compliance System (DOCS): Results from the One-Year Regulatory Study (AFRL-ML-TY-TR-2006-4515), at section 5.1 (2006), NTIS No. ADA444394. See attached.)

[1721] Commenters stated to further validate these findings, results concerning this Digital Opacity Compliance System (DOCS) method were published in peer-reviewed scientific journals by Dr. Michael J. McFarland of Utah State University. He assisted in development of the experimental designs related to statistical validation of measurements and served on the advisory committee. (ESTCP, at v.; Michael J. McFarland et al., Evaluation of the Digital Opacity Compliance System in High Mountain Desert Environments; 53 J. Air & Waste Mgmt. Ass'n 724 (2003), NTIS No. ADA426114. See attached; Michael J. McFarland et al., Measuring Visual Opacity Using Digital Imaging Technology, 54 J. Air & Waste Mgmt. Ass'n 296 (2004), NTIS No. ADA589086. See attached.; Michael J. McFarland et al., Evaluation of Digital Opacity Compliance System at Military and Commercial Industrial Sites, 15 Fed. Facilities Envtl. J. 73 (2004); Michael J. McFarland et al., Validation of the Digital Opacity Compliance System under Regulatory Enforcement Conditions, 56 J. Air & Waste Mgmt. Ass'n 1260 (2006), NTIS No. ADA464373. See attached.; and Michael J. McFarland et al., Field Demonstration of Visible Opacity Photographic Systems, 57 J. Air & Waste Mgmt. Ass'n 31 (2007). See attached.)

[1721] Commenters stated additionally, around the same time, and in a similar public-private partnership, researchers from University of Illinois at Urbana-Champaign backed by the U.S. Army Engineer Research and Development Center also published findings related to their digital optical approach to measuring opacity of emissions. Professor Du's Digital Optical Method ("DOM") was also promising, having found results consistent with Method 9 but with a wider variety of cameras, times of day, and sun angles, although one limitation was that these studies relied exclusively smoke generation machines in stable settings. (Ke Du et al., Field Evaluation of Digital Optical Method to Quantify the Visual Opacity of Plumes, 57 J. Air & Waste Mgmt. Ass'n 836 (2007), NTIS No. ADA495841. See attached.; Ke Du et al, Quantification of Plume Opacity by Digital Photography, 41 Envtl. Sci & Tech. 928 (2007), NTIS No. ADA498332. See attached.; and Ke Du et al, Evaluation of Digital Optical Method to Determine Plume Opacity during Nighttime, 43 Envtl. Sci & Tech. 783 (2009), NTIS No. ADA495860. See attached.)

[1721] Commenters stated while these studies are old news, collectively the recap is relevant to the current NESHAP revision in so far as it underscores the effort(s) that led to what has become an under-utilized ASTM standard, the role the EPA's Air Emission Measurement Center (EMC) played, and the important implications, benefits, and values this technological advancement sought to embrace. Credit is due to the strategists, planners, and research team for setting practical but important goals for the endeavor. First, the DoD sought to save money, noting that "Hill AFB has more than 1,600 emissions sources and trains more than 35 smoke readers twice each year," and it believed purchase of the necessary technical hardware "would be paid back within a year." (ESTCP, at section 5.3) Second, the goal was a system "designed to produce opacity readings, which are accurate, and provide a permanent digital record of the image for future reference." (ESTCP, at section 1.2) Finally, Defense Department authors didn't mince words addressing the importance of that permanent digital record: "While Method 9 has an extensive history of successful employment, its opacity measurements are inherently subjective, a characteristic that renders its results vulnerable to claims of inaccuracy, bias and, in some cases, outright fraud." (Rasmussen (2006), at 1) The academic papers reported development of an approach with "a number of advantages over Method 9, such as improved objectivity, low cost, and permanent photographic documentation" (Ke Du et al.,, Field Evaluation, at 843) as well as "[o]ver the lifetime of a DOCS system purchase (assumed 5 years), the cost savings in

utilizing DOCS versus Method 9 was estimated to be approximately $15,732 per opacity trained opacity observer." (Michael J. McFarland et al., Life cycle cost evaluation of the digital opacity compliance system, 91 J. Envtl. Mgmt. 927 (2010))

[1721] Commenters stated although the EPA did not lead this effort, the Agency's involvement was essential to the development of the digital opacity method. The lofty goals above could not have been achieved if the final product did not develop into a recognized and accepted standard. The Air Force authors explained, "the ultimate goal of the . . . field demonstration was to receive regulatory approval for the use of the DOCS by regulated DoD facilities, the [EPA] as well as several state regulatory agencies were involved in all aspects of the DOCS field demonstration study." (Rasmussen (2005), at section 6.6) Specifically, the EPA's Emissions Measurement Center (EMC) "was integral in assessing both the scientific underpinnings of the DOCS technology as well as the regulatory hurdles associated with the eventual application of a digital-camera-based opacity technology by the regulated community."

[1721] Commenters stated in the years 2005 through 2012, the struggle to create an accepted method paid off, with a theoretical approach to modernizing Method 9 going from a theory, to a Preliminary Method, to an ASTM standard, and to an accepted Alternate Method. ((EPA EMC, Determination of Visible Emission Opacity from Stationary Sources Using Computer-Based Photographic Analysis Systems (PRE-008), (2005), https://www.epa.gov/emc/emc-other-test-methods; ASTM, Standard Test Method for Determining the Opacity of a Plume in the Outdoor Ambient Atmosphere (D7520-09), (2009), https://www.astm.org/d7520-09.html; Recent Postings of Broadly Applicable Alternative Test Methods, 77 FR 8865, Feb. 15, 2012, https://www.epa.gov/sites/default/files/2020-08/documents/alt082.pdf) It might have been reasonable at the time to expect market forces to be a sufficient driver for the wider adoption and development of the method, but the EPA must accept that the method it worked to foster has failed to launch, so to say. (National Emission Standards for Hazardous Air Pollutants: Integrated Iron and Steel Manufacturing Facilities Residual Risk and Technology Review: Background Information for Final Rule - Summary of Public Comments and Responses, EPA-HQ-OAR-2002-0083-1100, at p. 6-10 (May 2020) ("the DCOT system currently has limitations in the use of the method . . . [t]here are currently no vendors supplying portable ASTM D7520-16 compliant systems.") Given the numerous potential benefits and foundational work establishing the potential for a technology-based update to Method 9, the EPA must consider options for advancing the technology to overcome practical limitations discussed next.
<This comment did not contain attachments referenced by "See attached">

Response 14:

The EPA agrees that the digital camera opacity technology is highly promising. The limitations discussed in *Summary of Public Comments and Responses for Risk and Technology Review for Integrated Iron and Steel Manufacturing Facilities* (EPA-HQ-OAR-2002-0083-1100) are still applicable. By continuing to allow the use of this technology as an option for compliance, the EPA anticipates that the availability and adoption of the technology will increase. We neither proposed nor are finalizing the removal of ASTM D7520-16 as an option for compliance. The EPA is making no changes to the applicability of ASTM D7520-16 in this rulemaking.

Comment 15:

[1721] Commenters stated requiring DCOT in the Ferroalloys NESHAP did not generate a competitive market, innovation, and solutions; the EPA should (and might already) understand the root cause of that setback, but even if barriers to full deployment remain, the DCOT benefits support taking even incremental steps if necessary.

[1721] Commenters stated presently, facilities subject to II&S NESHAP have the option of determining the opacity of fugitive emissions according to Method 9 or the ASTM Standard Test Method for Determining the Opacity of a Plume in the Outdoor Ambient Atmosphere (ASTM D7520-16) subject to certain conditions in 40 C.F.R. Part 63 Subpart FFFFF. (30 40 C.F.R. section 63.7823) In spite of potential benefits, both Cleveland Cliffs and U.S. Steel in their ICR response cover letters declared "Method Alt-082 should be removed as an opacity measurement" all together. (E-mail: Submitting US Steel Integrated Iron and Steel Information Collection Request responses, Cover Letter, EPA-HQ-OAR-2002-0083-1376 (June 3, 2022); E-mail: Submitting Cleveland Cliffs Middletown Works Enclosure 1 Questionnaire response, EPA-HQ-OAR-2002-0083-0793 (June 3, 2022)) So long as DCOT remains an option, it feels like it will remain an unused option.

[1721] Commenters stated without more details concerning the limited DCOT vendor issue being readily available, it is difficult to assert that creating the market must be the first step (e.g., requiring DCOT across the board in the II&S NESHAP), but it must be a step. There must be a demand for the technology, and the benefits of the technology are in the public's interest. To that end, if a comprehensive DCOT requirement is not feasible, the EPA should consider partial measures and/or alternate options, such as:

- Incentivizing the installation of cameras so long as compliance and standards are not bargaining chips;
- Requiring the installation of cameras as a preliminary step to assess and support anticipated compliance, which was ordered in a recent Consent Decree between the EPA and U.S. Steel (Consent Decree, United States v. U.S. Steel Corp., No. 2:22-cv-00729 (W.D. Pa. Dec 16, 2022), ECF No. 10, at ¶ 37 ("Emissions Surveillance and Process Optimization Cameras for Blast Furnace Area and BOP Shop. Within 180 Days after the Effective Date (December 16, 2022), U. S. Steel shall install and maintain a video camera system that includes multiple video cameras that are aimed at the Blast Furnace Stove Stacks, Casthouse Roof Monitors, Casthouse Baghouse, BOP Shop Roof Monitor, BOP Shop Scrubber Stacks, and the two Torpedo Car staging areas near the location of the Riley Boilers. The video camera system shall record and send live video feeds to appropriate personnel, including personnel in the control rooms for the Casthouses and BOP Shop."). See attached.);
- Requiring the "customized fixed-location camera systems" mentioned in the 2020 Comment-Response document (Comment Response, at p. 6-10) at suitable locations, with the understanding that the image files generated would be valid, a software solution will be found, and images can always be assessed at a later time; the EPA's approach to the II&S fenceline monitoring suggests that recognizing a need but not having every detail ironed out should stop the EPA from moving ahead (88 FR 49418 ("With regard to fenceline monitoring requirements, a method for the fenceline measurement of metals has not yet been promulgated."));

- To the extent the EPA considers fixed camera options, the EPA should examine the feasibility of nighttime measurements, which was ordered in a recent Consent Decree between the EPA and Maynard Steel Casting Company (Consent Decree App. C, United States v. Maynard Steel Casting Co., No. 2:17-cv-00292 (E.D. Wis. Mar. 1, 2017), ECF No. 2-4 ("Although Section 6.2 of ASTM D7520-13 states that this method shall only be used during daytime conditions, USEPA Region 5, during a January 27, 2015, meeting with Maynard, specifically identified this method as being acceptable for use in nighttime opacity monitoring."). See attached.); and
- A Method 22 equivalent for already-very-low proposed opacity standards

<This comment did not contain attachments as referenced in the footnotes by "See attached.">

Response 15:

The commenter has not provided sufficient details for the EPA to consider options for incentivizing the use of cameras within the constrains noted by the commenter. The EPA continues to allow the use of ASTM D7520-16 as an option for compliance.

The EPA further disagrees with the commenter that fixed location camera systems should be required to be installed. The reason for the specification of where the sun is behind an observer is because that has an impact upon the perceived opacity, as can be imagined, light flowing left to right through a plume across a viewer (or camera) will have quite a different perceived opacity than light passing from behind the viewer (or camera). This is not a matter of not having all of the details, such as with respect to fenceline, monitoring where the technology is already available and was used in the CAA section 114 request, in this case the technology is not even developed. The EPA lacks sufficient precision and bias data to determine the validity of ASTM D7520-16 for nighttime opacity. Until such time as the validity of this approach at night has been provided, the EPA will not approve its use in regulatory purposes in this manner.

The EPA disagrees with the commenter that an EPA Method 22 equivalent is necessary for these low opacity standards. An EPA Method 22 alternative would necessitate a correlation between a non-zero opacity standard and the time-based EPA Method 22 standard. While when a standard is 0 percent opacity, that correlation could be envisioned, that same logic does not translate when there is an allowable amount of opacity. The EPA is not amending the final rule to create an EPA Method 22 option.

Comment 16:

[1721] Commenters stated market-based and/or technical matters with DCOT aside, relying on not just one company but just one person for the advancement and management of an accepted, legally binding, federally enforceable feels suboptimal; if possible, the EPA backing the standard should involve expansion and transparency of it.

[1721] Commenters stated not having a complete picture of DCOT implementation over the years makes this more of a question than point of advocacy, but it appears possible that the sole DCOT vendor is or was run by a person who works or worked with ASTM setting the standard and who also appealed a Title V permit in Arizona, albeit unsuccessfully, with the aim of making opacity monitoring via "Alternative Method 082" a requirement in the permit. (Order Denying

Petition for Review, In Re: Salt River Project Agricultural Improvement and Power District – Navajo Generating Station, NSR Appeal No. 16-01 (Aug. 30, 2016)) It is not clear if this is accurate or even if it is, what the EPA could do to address it, but broadly it feels like the insular circumstances surrounding the DCOT standard are contributing to its limitations.

[1721] Commenters stated, relatedly, for better or worse, the EPA should note ASTM has a draft "New Test Method for Measuring Opacity of fugitive emissions containing particulate and other pollutants" under development. (ASTM WK83814, https://www.astm.org/workitem-wk83814)

Response 16:

The EPA acknowledges the commenter's input and EPA is aware of a standard under development for fugitives measurements, being developed by ASTM Since this standard has not been adopted by ASTM or any other consensus standard, the EPA is not required to consider it for use under the National Technology Transfer and Advancement Act. When this standard has been adopted by ASTM or another consensus body, EPA could consider it for use subject to Administrator approval under § 63.7(f).

Comment 17:
[1562] Commenters stated the EPA should set the MACT standards with the as proposed input limit of 0.00026 lbs of mercury per ton of scrap as proposed in the 2019 proposal with a MACT standards and demonstration of compliance with that standards to include:

- Conduct a semi-annual emissions test at all BOPF related units and convert the sum of the results to input-based units (i.e., lb. of mercury per ton of scrap input); and
- Document the results in a test report that can be submitted electronically to the Compliance and Emissions Data Reporting Interface (CEDRI).

[1562] Commenters stated they do not support the alternative compliance method for demonstrating compliance with the mercury limits. Commenters do not believe it's adequate to rely on voluntary compliance certifications, particularly when these sources of scrap can be changed over time, as an appropriate way of demonstrating compliance.

Response 17:

The EPA did not propose change to or solicit comment on this provision, which was finalized in 2020. Therefore, this comment is outside of the scope of this rulemaking.

As described in the Federal Register Notice (i.e., preamble) for this final rule, to address the claims and concerns that the proposed limits would be excessively burdensome (for example the comment that the 5 percent limit might require construction of full enclosures and additional control devices), and after further review of available data, further review of available data, we removed the proposed opacity limits for BF casthouses and BOPF shops. We are still however finalizing work practices for BOPF shops. Based on evaluation of available opacity data and ability of facilities to implement relatively low cost work practices to help minimize emissions, we conclude that facilities will be able to comply with these new work practices without the need for any excessive capital expenditures. We conclude that with these work practices, no facility will need to construct additional enclosures or additional control devices to comply. We expect

the capital and annual costs to comply with these work practice standards will be quite reasonable.

2.2 UPL calculation approach for MACT floors

Comment 1:

[1627] Commenters stated the EPA's use of detection levels is unlawful and arbitrary. Commenters stated whenever the 99th percentile UPL was less than 3 times the so-called "representative detection level," for a pollutant, the EPA set the floor for that pollutant at three times the representative detection level. (2023 MACT Costs Memo at 7-8.) The Agency claims "[t]here is a concern that a MACT standard emission limit based on a truncated data base (i.e., calculated using values at or near the method detection limit) may not account adequately for data measurement variability, because the measurement error associated with those values provides a large degree of uncertainty. The expected measurement imprecision for an emissions value occurring at or near the detection limit is about 40 to 50 percent." (*Id*. At 7)
[1627] Commenters stated it is well established that the EPA's floors must reflect the emission levels achieved by the relevant best performing sources, those with the lowest emission levels, and that the EPA must demonstrate that they do so with substantial evidence. (*Sierra Club v. EPA*, 479 F.3d 875, 880-881 (D.C. Cir. 2007); Cement Kiln Recycling Coalition v. EPA, 255 F.3d 855 (D.C. Cir. 2001)) The floors that the EPA sets at three times the representative detection level ("3xRDL") do not purport to reflect the emission level achieved by the relevant best sources. As the EPA explains, they are based on a detection level rather than the emission levels actually achieved by any source, let alone the relevant best performing sources. A fortiori, the EPA has not carried the burden of demonstrating the Agency's floors reflect the relevant best sources' emission levels with substantial evidence.

Response 1:

The EPA disagrees with the commenter that MACT floors set at 3xRDL do not reflect the emission level achieved by the best sources. The methodology is the same methodology used in the Sewage Sludge Incinerators rule, and this issue was challenged and upheld in *NACWA v. EPA* (August 20, 2013). Specifically, the court upheld the use of the UPL and the 3xRDL in MACT standard setting, stating the following:

"We agree with EPA that its method of incorporating non-detect data is reasonable, and not arbitrary or capricious. We do not expect EPA to perform the impossible, see Cement Kiln, 255 F.3d at 871, and that includes recording emission levels that are not accurately detectable with its current emissions testing technology. As EPA explains the issue, emission levels from zero up to some value above the method detection level cannot be stated with accuracy. Because any emission level EPA selects at that point will necessarily be an estimate, EPA adopted a method to account for measurement imprecision that has a rational basis in the correlation between increased emission values and increased testing precision.

Although Sierra Club argued in its comments that the EPA should have at the very least assumed that non-detect data was at the detection limit, it did not offer any evidence that the EPA was incorrect in explaining why, given the measurement imprecision at the MDL, a non-detect test run would always yield emissions data below the MDL. Because we owe significant deference to

the EPA in areas of its technical expertise, we reject Sierra Club's challenge to the EPA's method of addressing non-detect data."

Comment 2:

[1627] Commenters stated the EPA's use of detection levels is unlawful and arbitrary. Commenters stated the EPA's concerns about "uncertainty" are no substitute for showing that the Agency's floors reflect the relevant best sources. If the EPA is concerned about uncertainty of data within a certain range of detection levels, the Agency needs to address those uncertainties by, inter alia, gathering more and better data and requiring sources to use lower detection levels when they test. Significantly, the EPA has refused to gather more data and has refused to require sources to use the detection levels that can actually be achieved so, to the extent there is actually a problem with certainty around any of the EPA's data, the Agency itself created the problem voluntarily and unnecessarily and the Agency could solve the problem by gathering more test data of better quality.

[1627] Commenters stated the EPA's concerns about uncertainty are vague, unexplained, and arbitrary. The EPA has concerns about not only data that are at or below detection levels but also data that are "near" detection levels. (2020 Floor Memo at 7.) The Agency does not say how "near" a test result must be to detection levels to raise concerns, however. Nor does the EPA say any of the above detection levels the Agency has are actually so "near" as to raise concerns. Nor does the EPA say how these concerns lead the Agency to reject UPL floors in favor of floors set at 3xRDL, regardless of whether any particular test results are actually too near detection levels – whatever that might mean – whenever the UPL approach yields floors that are lower than 3xRDL. Lastly, the EPA does not explain why any concerns the Agency might have about test results that are near (but above) detection levels are not addressed by the Agency's UPL approach, which inflates the floors to a level that the sources selected as best will meet in 99 out of 100 future tests.

Response 2:

The EPA disagrees with this comment. First, as noted in Response 1 in this section, the court upheld the use of the UPL and 3xRDL in MACT standard setting. Second, the commenter suggests, with no facts or support, that the Agency "created the problem [related to detection limits] voluntarily," but the EPA's approach for establishing standards when measurements are near the detection limit is well-explained in the record. We also note that the test methods that EPA requires are state-of-the-art measurement methodologies that EPA continuously works to improve. Any suggestion that the Agency could simply "solve the problem by gathering more test data of better quality" is speculative and ignores the work of the Agency that went into gathering the data used in this rulemaking and in developing test methods. Finally, regarding the comment that the Agency does not explain why any concerns the Agency might have about test results that are near (but above) detection levels are not addressed by the Agency's UPL approach, the 3xRDL approach ensures the test methods required for demonstrating compliance have the necessary precision at the level of emissions being measured. The UPL does not impact the precision of the measurement methods in any way.

As described in the previous response above, our approach for treating detection levels is appropriate. With regard to data, due the *LEAN* court decision, CAA section 112(d)(2)/(3)

mandate and the current Court Order regarding the deadline for this final rule, the EPA needs to establish emissions standards based on available data in this final rule. EPA did not have time to collect additional data through a section 114 request after EPA received these public comments. Nevertheless, stakeholders could have submitted additional data months ago if they thought EPA's data set was not sufficient.

Comment 3:

[1596] Commenters stated the EPA proposes a MACT floor for five hazardous air pollutants at existing sinter plants that is based upon those facilities' upper prediction limit rather than the control technology that is maximally achievable. As a result, the EPA estimates that all of the existing sinter plants will be able to meet the new limits with no additional controls and there will be no emissions reductions with these new standards. The estimated costs for compliance testing is $50,000 to $75,000 per facility, once every 5 years.

[1596] Commenters discussed the existing sinter plants. They noted Northwestern Indiana has long been the home of large integrated iron and steel manufacturing facilities. Commanding large stretches of the southern end of Lake Michigan, once considered a swampy wasteland good for little else, the steel industry benefitted from easy access to rail and shipping. During the contraction of the steel industry in the United States throughout the 1980s, the steel mills of Northwestern Indiana changed hands several times, but continued operations relatively unaltered. Today, there are four operating integrated iron and steel mills in Northwestern Indiana, all of which have sinter plants, but only two are operating:

- **Cleveland-Cliffs Steel, Indiana Harbor West** (formerly Youngstown Sheet and Tube Company, which became part of LTV Steel in 1984)
  - Sinter plant built in 1958, ceased operations on November 20, 2008, but remains in its Title V CAA permit.
- **Cleveland-Cliffs Steel, Indiana Harbor East (formerly Inland Steel) (Although operated jointly, Indiana Harbor East and West are separate facilities with separate State-issued Title V permits.)**
  - **Sinter plant built in 1959, placed on idle on March 23, 2022 with no current plans to restart, but remains approved for operations in its permit.**
- **U.S. Steel Gary Works**
  - **Sinter plant built in 1958 continues in operation.**
- **Cleveland-Cliffs Steel, Burns Harbor (formerly Bethlehem Steel)**
  - **Sinter plant built in 1968. Idled in 2020 for five months, still in operation.**

[1596] Commenters stated based upon these facilities' annual emission statements as reported to the Indiana Department of Environmental Management, emissions from the sinter plants are a significant contributor to overall facility emissions. Commenters discussed emissions data in an included appendix < **no appendix was included with this comment**>, which they described as a compilation of annual emissions from the three integrated iron and steel manufacturing facilities with the most recently operating sinter plants over the past five years (2018-2022). Commenters noted the emissions are from each facility's Annual Emissions Statement, reported pursuant to 326 IAC 2-6. Commenters noted they take no position on whether the reported emissions in the appendix are accurate, but are using them to discuss relative amounts. Commenters noted while

the emissions in the appendix are not a comparison of HAP emissions (except for lead), these compilations of criteria air pollutants show the variation and significance in the contributions that these sinter plants make. For example, the sinter plant at Burns Harbor contributed over 90 percent of the plant's 3,100 pounds of lead emissions in 2022.

Response 3:

As described in the preamble, EPA is promulgating MACT Floor standards for 2 HAP (i.e., COS and HCl) and work practice standards in lieu of MACT floor standards for 2 other HAP (i.e. CS2 and HF) emitted from sinter plants based on available test data as required by the *LEAN* court decision, CAA section 112(d)(2)/(3) and the Court Order regarding the schedule (deadline) for this rule. With regard to mercury, as described in the preamble, we are finalizing a BTF limit based on the reasons explained in the preamble for this final rule.

The commenters suggestion that the standards must represent what is maximally achievable in their view rather than the "maximum achievable control technology" as defined in CAA section 112(d)(2) and (3) is unfounded. The statute defines what levels must be required and the EPA's final standards reflect those levels. The other points in the comment are informational only, and the EPA acknowledges those points.

3. Proposed Standards for UFIP Sources

Comment 1:

[1683; 1492; 1491; 1550] Commenters stated that a 15% reduction in toxic emissions is not enough to protect nearby communities.

[1492; 1491] Commenters stated that sinter plants are the major contributor to dust emissions from integrated ironworks and steelworks, are outdated and unnecessary, and should be closed.

[1492; 1491] Commenters stated that the EPA should expand the scope of the 2023 Proposal to include best work practices that reduce all toxic emissions from steel mills at a minimum by 65 percent.

Response 1:

The change from the 65 percent emission reduction estimated in 2019 to the emission reductions calculated for this rule is primarily due to calculation improvements based on newly received data rather than changes to the set of work practices published. The EPA is finalizing many of the same UFIP work practices that were published for comment in 2019. However, through the 2022 section 114 collection the EPA received information about work practices that are currently being utilized by facilities. The data showed that a subset of the facilities are already utilizing some of the UFIP work practices that are being finalized, which was not taken into account in the baseline emissions estimate conducted in 2019. In the emissions estimate conducted for this rulemaking, baseline emissions were adjusted based on facility-specific information on work practices that are already in use, resulting in lower baseline emissions. If a facility is already using a work practice that is being finalized in this rulemaking, the percent reduction of emissions estimated for that work practice was also removed from the total estimated emission reduction for that facility. The estimated baseline emissions and emission reductions are

described in the memorandum titled: *Unmeasured Fugitive and Intermittent Particulate Emissions and Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF* (Docket ID Item No. EPA-HQ-OAR-2002-0083-1447).
Regarding sinter plants, EPA is finalizing stricter standards, including ACI controls for dioxins and furans, to further lower emissions from sinter plants.

Comment 2:

[1594] Commenters stated that throughout the proposed revisions, the EPA seeks comment on whether work practice standards or opacity standards (or both) should be required. Commenters did not support the EPA choosing between opacity and work practice standards for BF planned bleeder openings or the BF casthouse. First, Method 9 monitoring used to determine opacity levels is not always available (e.g., at night or during certain weather events such as snow, sleet, rain or cloudy days). As such, work practice requirements should be required in addition to opacity requirements to compensate for the times in which opacity cannot be reliably measured via Method 9 observations.
[1594] Commenters stated that opacity limits also complement work practice requirements because observed opacity exceedances can identify the unit(s) that may be producing emissions for which a work practice would reduce those emissions. Work practice standards are usually implemented on a predictable schedule. Accordingly, work practice standards can help identify and minimize deterioration or the malfunction of components so that they can be repaired before substantial amounts of pollutants are released, avoiding visible plumes exceeding the opacity limit. Because opacity limits and work practice requirements complement one another and fill gaps for one another, together they represent the maximum degree of reduction in emissions of the hazardous air pollutants that is achievable. Commenters recommended that the EPA require opacity and work practice requirements for BF planned bleeder valve openings and BF casthouses.

Response 2:

As described in the preamble, after considering public comments, for two UFIP (BOPF Shop and unplanned bleeder valve openings), EPA is finalizing work practices and an operational limit (i.e., work practices for BOPF and # unplanned openings per 12-month rolling averages). For the other two UFIP, EPA has decided to finalize numerical opacity limits (e.g., for slag processing and planned openings). For the other two UFIP (Bell leaks and beaching), EPA finalizing the following: for Bell leaks, EPA is finalizing a opacity action level (not a limit) and work practices; and for Beaching only work practices.

Comment 3:

[1594] Commenters stated that the EPA should not adopt suggestions provided by industry to require only that sources include specific work practice requirements in facility-specific O&M Plans. Commenters stated that while there may be variability in operations or conditions at each source, the EPA is not precluded from establishing uniform work practices for all UFIP sources within this sector. Further, allowing sources to instead include work practice requirements in their O&M Plans could result in some sources having fewer, less significant or no work practices at all apply to their UFIP sources. Commenters stated that in order to truly reduce HAP emissions from UFIP sources within the II&S sector, the EPA should maintain the work

practices it has proposed and not revise these requirements to instead allow sources to include work practices in site-specific O&M Plans.

Response 3:

After reviewing all public comments, as described above, we are finalizing some work practices. However, for some of these (such as the work practices for small Bell Leaks for small bell seals) we think it is appropriate to allow site specific parameters that would be part of facility-specific O&M plans. Nevertheless, as described in the preamble and in the final regulatory text, some work practices are more prescriptive, as appropriate.

Comment 4:

[1594; 1562] Commenters stated that the EPA should consider continuous opacity monitoring that would be operationally appropriate for not only the BF casthouse on which the EPA requested comment, but also the other UFIP sources for which opacity limits have been proposed. Method 9 monitoring requirements for the other components of BFs and BOPFs cannot ensure continuous compliance with VE limits that apply at all times. Conducting visible observations for, at most, once a week for some UFIP sources, would miss any times in which opacity exceeds the prescribed limits that aren't during these times. The EPA does provide for a digital opacity technique in the alternative of Method 9, which could be preferable. Commenters stated that the EPA should require at least video surveillance of all components of BFs and BOPFs for which an opacity limit is established to detect VE to ensure continuous compliance.

[1496] Commenters stated opacity readings have not been a useful tool. Continuous monitoring and digital camera use is essential. The related data must be provided to the EPA and to the public.

Response 4:

EPA disagrees with the commenter that continuous opacity monitoring is appropriate for these sources. At this time, continuous opacity monitors capable of measuring opacity at roof monitors and other fugitive sources are not currently available. Additionally, ASTM D7520-16 (the digital camera opacity technique allowed as an alternative method in this rule) has the same limitations as EPA Method 9 when it comes to light and the position of the camera/observer. Video surveillance of the components with opacity limits would also have the same lighting/position considerations when it comes to evaluating low levels of opacity, and would not be sufficient to demonstrate compliance or non-compliance with the opacity limits. The EPA is finalizing the rule as proposed, and not including additional video surveillance or adding continuous opacity monitoring.

Comment 5:

[1631] Commenters stated that nowhere in this proposal does the EPA explain why the proposed standards estimated to achieve reductions in metal HAP at a level of cost effectiveness ranging between $30,000 per ton and $15 million per ton are reasonable. Commenters stated that while the proposal is not explicit on this point, the EPA can be understood to be holding to its previous position that, notwithstanding the plain language of CAA section 112(d)(2), it need not "tak[e]

into consideration the cost of achieving such emission reduction" when it is establishing a MACT standard that is derived from the calculated MACT "floor." Rather, as the EPA understands it, only when considering whether to establish a more stringent "beyond-the-floor" standard under CAA Section 112(d)(2) is the EPA required by the statute to consider costs in determining whether a standard is "achievable."

[1631] Commenters stated that the approach proposed for establishing MACT standards for previously unregulated UFIP sources is not legally permissible. Paragraph (d)(3) does not operate to establish a "minimum control level" for existing source MACT standards, such that the EPA is authorized to establish a MACT standard for an existing source based on the paragraph (d)(3) "floor." Commenters stated that only paragraph (d)(2) authorizes the establishment of MACT standards, and, in establishing those standards for existing sources, the statute is clear that cost must be considered. Additionally, basing an existing source floor under paragraph (d)(3) on the "average [actual emissions] performance" of the "best-performing" five sources in the source category is contrary to the plain language of CAA Section 112(d)(3), as a straightforward examination of that language reveals. Finally, commenters stated that the EPA cannot establish "work practice/operational" standards based on paragraph (d)(3) "floors," and has failed to demonstrate that the proposed "work practice/operational" standards are "consistent with" paragraph (d)(2).

Response 5:

EPA took into consideration comments on whether standards set under the CAA section 112(d)(6) provision would impose excessive cost. Based on comments received, EPA has altered its decision to set opacity standards at 5% for the BF and BOF; instead, EPA has removed the proposed opacity limits for BF casthouses and BOPF shops. We are still however finalizing work practices for BOPF shops. EPA expects that this change from the proposal in the opacity standard will ensure that emissions reductions are achieved in a cost-effective manner. EPA further notes that, in contrast to setting MACT floors under CAA section 112(d)(3), costs may be considered when evaluating the stringency of additional requirements imposed under CAA section 112(d)(6).

3.1 BF unplanned bleeder valve openings standards

Comment 1:

[1631] Commenters cited the preamble which indicates that multiple openings in a 30-minute period could be considered a single opening, whereas the 2023 UFIP Memo indicates that they shall be considered a single opening. Commenters stated that it would be appropriate to treat such events as a single opening because they would have the same initiating factor, and it would be highly unusual for independent events to cause multiple openings in such a short period of time. Commenters believed that multiple PRD openings (including openings in different locations on a blast furnace) over 120 consecutive minutes (2 hours) should be considered a single opening or "event."

[1631] Commenters stated that just as the EPA uses the PRD term for other industries with such safety devices, it should use that term in these rules as well.

[1631] Commenters stated that the proposal does not distinguish between types of pressure relief device openings except to distinguish between planned and unplanned openings. Because pressure relief devices that are located after a dustcatcher or a scrubber, referred to in the industry a semi-clean or clean gas bleeder valve, result in lower emissions and lower opacity, any limitation on the number of openings should not apply to those openings because the EPA's focus in the 2022 section 114 data collection was on openings of PRDs that occurred prior to dustcatchers or scrubbers. Commenters suggested the following text to make this clarification: Planned pressure relief device opening means the opening of a blast furnace pressure relief safety gas bleeder valve, prior to a dustcatcher or a scrubber (and if both are in place, it means the opening prior to both), that is initiated by an operator. These openings are located on furnace offtakes. In addition, commenters recommended that the EPA make it clear in other provisions of the rule that there is no limitation on the number of openings of pressure relief devices located after dustcatchers or scrubbers, and suggested the following definition of unplanned pressure relief device opening:

Unplanned pressure relief device opening means the opening of a blast furnace pressure relief safety gas bleeder valve, prior to a dustcatcher or a scrubber (and if both are in place, it means the opening prior to both), that is not a planned pressure relief device opening.
Unplanned pressure relief device opening event means all unplanned pressure relief device openings on a single blast furnace, prior to the dustcatcher or scrubber, that occur within 120 consecutive minutes regardless of location on the blast furnace.

Response 1:

The numeric limits apply to both dirty gas and clean gas bleeder valves. The EPA understands that the clean gas bleeders are after the dustcatcher. The numeric limits will be met by the operator performing certain material and operating practices that reduce furnace upsets and thus unplanned openings. If those practices are followed, the number of dirty and clean openings will drop.

The EPA agrees that there can be frequent openings of the bleeders in short succession, all with the same cause. The EPA has determined that 30 minutes is an appropriate time period for grouping openings with a single cause.

Comment 2:

[1631] Commenters stated that the proposed distinction between planned and unplanned openings drawn in the proposal is based on initiation of an opening by an operator, which means an opening by an operator is "planned." All other openings are considered "unplanned" and are initiated automatically by a "blast furnace pressure relief safety valve." Proposed 40 CFR 63.7852. These PRD safety valves may be hydraulic with a set point or simply counterweighted to correspond to an established pounds per square inch (psi). No matter the design, however, the purpose is to prevent over-pressurization and the associated hazards.

[1631] Commenters agreed that there are generally two categories of openings and that in general, a planned opening is one that is initiated by an operator. It is important to recognize, however, that a planned opening may not be planned for a long period of time in advance. Often an operator must make a decision to open a PRD within only a few minutes. The preamble's

explanation of the distinction, however, does not match up with the regulatory language or with the reality of facility operations. Specifically, the preamble states that a planned opening is initiated "as part of a furnace startup, shutdown, or temporary idling for maintenance action." 88 Fed. Reg. at 49,408. This explanation is actually narrower than the regulatory language, which more appropriately notes that operators initiate openings during operations as needed to reseat a pressure relief device to minimize leaking or to address situations where pressure relief is required. The action contemplated by the proposal language makes sense because operators would be doing so to prevent a situation in which a potentially more significant unplanned PRD opening might otherwise occur. Commenters stated that the EPA should confirm that the difference between planned and unplanned openings is related to operator initiation and not whether the opening is tied to a startup, shutdown, or idling for maintenance.

Response 2:

EPA intends the distinction between planned and unplanned to the operator's actions (or lack of action). We agree that the difference between planned and unplanned openings is related to operator initiation (i.e., whether or not the operators planned the opening in advance) and not whether the opening is tied to a startup, shutdown, or idling for maintenance.

Comment 3:
[1627] Commenters stated that limiting the number of unplanned openings is a work practice requirement rather than a numeric emission limit. Commenters stated that the CAA requires the EPA to promulgate a numeric emission limit – which must comply with section 112(d)(2)-(3) – unless the EPA demonstrates it is not "feasible" to do so under section 112(h). The EPA does not claim or demonstrate that it is not feasible to set a numeric emission limit. Commenters stated that the EPA would violate the CAA and acts arbitrarily by setting work practice requirements rather than numeric emission limits.

Response 3:

As the commenter recognizes, in certain instances, as provided in CAA section 112(h), if it is the judgment of the Administrator that it is not feasible to prescribe or enforce an emission standard under CAA 112(d)(2) and (3), the EPA may set work practice standards under CAA 112(h) in lieu of numerical emission standards. Unplanned openings, as a result of their unpredictable timing as well as their short duration, cannot be tested using conventional emissions test methods. There are also potential safety issues that, even if a test method were developed, make testing these locations during an unplanned opening impossible. For BF unplanned bleeder valve openings, the Administrator has therefore determined that since is it not feasible to directly measure these emissions, it is appropriate to finalize a section 112(h) work practice standard.

Comment 4:

[1631] Commenters stated that the EPA's proposal is not specific as to the consequence of exceeding the number of allowed unplanned PRD openings within a year. The final rule should be clear about the consequence and provide that, instead of any type of monetary penalty for exceeding the allowable number of unplanned openings, the facility should be required to conduct a review to determine whether any of the PRD openings could have been reasonably prevented.

Response 4:

Failing to meet the allowed number of unplanned openings would be a violation of the NESHAP, which is subject to penalties. Furnace operators are expected to design and operate continuously to meet this and all other rule requirements.

Comment 5:

[1627] Commenters stated that assuming the EPA can and should set work practices to control unplanned openings at blast furnaces, rather than setting numeric limits for emissions from blast furnaces at all times, the EPA should clarify that sources have an obligation to conduct a root cause determination and correction following each unplanned bleeder stack opening to assure compliance with 5 openings per year limit and that sixth unplanned opening in a year is not a single day of violation but is instead a continuing (365 day) violation of the requirement to have and implement a plan to prevent the sixth opening. Commenters stated that absent such a clarification operators will argue that the maximum civil penalty for any additional openings is limited to the CAA daily maximum penalty. Commenters stated that the regulations should also require near-contemporaneous online reporting of bleeder stack openings to WebFIRE.

Response 5:

There are many factors that impact the number of unplanned openings. EPA is promulgating some work practices along with the numeric limit, but there may be other operating practices that operators find beneficial. Ultimately, furnace operators must design and operate their systems to meet the numeric limit.

Comment 6:

[1562] Commenters supported the establishment of the work practice standards and stated that facilities should be required to report the unplanned openings (including the date, time, duration, and any corrective actions taken) in the semiannual compliance report.

Response 6:

The EPA agrees with the commenter that a reporting element is necessary for the unplanned openings and is finalizing as proposed at 40 CFR 63.7842(g) to require the recording of and 40 CFR 63.7841(b)(14) to require the reporting of the date, time, the duration, and a description of any corrective actions taken with the slight modification from the proposed regulatory text to specify that it is the start date and time and the duration is to be reported in minutes.

3.1.1 Proposed work practices for unplanned openings

Comment 1:

[1631] Commenters stated that installing additional monitoring of stockline movement is not a preventative measure but merely an indicator of a problem that has already occurred or that is inevitable, and thus will not reduce emissions. While some facilities have installed and continue to use stockline monitors, other facilities have not. While these monitors may serve as an indicator of a slip occurring that cannot be prevented, most of the time they are simply

ineffective. The facilities using stockline monitors have proven them unreliable due to frequent malfunctions.

[1631] Commenters stated that because these devices are costly and unreliable due to frequent malfunctions, and because other measures can be taken to minimize the frequency of unplanned openings due to slips, the EPA should allow alternatives to be proposed through a facility's slip avoidance plan, which would include procedures to minimize the frequency of unplanned openings, such as proper management of raw materials through implementing a quality control plan. For BFs that rely on a stockline monitoring device, the plan could also document the use of the stockline monitoring device to measure stockline and burden movement to assist in evaluating slip occurrences as part of slip minimization efforts.

[1631] Commenters stated that because of the problems experienced with the use of these monitors and because other site-specific options are available to minimize potential slips, the EPA should not impose this requirement. If the EPA nevertheless moves forward, the EPA should not require three monitors, especially for smaller BFs. Smaller BFs may not have a sufficient diameter to be able to physically accommodate three monitors. Also, on smaller BFs, the burden profile variability is significantly less, so additional monitors do not provide a meaningful increase in data.

Response 1:

Stockline monitors are used to monitor the level of the burden and indicates when more raw materials should be added in the furnace. Consistent movement of the stockline indicates a normal rate of descent of the burden in the furnace. Operators take actions, such as "checking" the furnace, to correct issues that affect the normal rate of descent such as raw materials bridging and hanging in the furnace. EPA knows that if small hangs of burden are made to drop, the resulting small slip will often not create enough of a pressure surge to open the bleeders. So, although hanging of material already occurred (indicated by an alarm), a quick response will prevent larger slips that result in an unplanned opening. EPA expects that the monitors and associated alarms will be used by operators to take action quickly when the burden is not descending as planned and their quick action will prevent unplanned openings.

Comment 2:

[1631] Commenters stated that in the preamble, the EPA states that a screening process to remove fines is a proposed work practice standard. The draft rule language, however, did not include a screening process. The EPA's 2023 UFIP Memo includes a cost estimate for screenings—"estimated to have a capital cost of $1,000 based on engineering judgment with a low confidence level." This estimate is completely unrepresentative of actual costs for a raw materials screening operation. Commenters stated that the EPA should not move forward with a screening process.

[1631] Commenters identified that a majority of BFs currently receive screened input materials or have screening in place. However, for those BFs that do not have screening capabilities or receive screened materials, one approach that may reduce slips is to install material screening systems at each BF that does not process screened materials. Industry has existing data on the costs to retrofit each BF with a screening system to aid in reducing slips (and unplanned PRD

opening events). For facilities without screening, the capital cost to install could be more than $12.5 million per furnace (Cleveland-Cliffs project cost estimate), and feasibility is impacted by available space around the furnace to install necessary equipment, so adding screening may not be technically feasible. Commenters believed that at a minimum (and without high technical confidence that it can achieve the proposed standard) that installation of screening will be required to meet the proposed limitation; therefore, costs for these systems must be incorporated into industry's cost-effectiveness analysis. Assuming screening for four BF casthouses is required, the industrywide total capital costs would be $50 million for this item alone, with overall annual costs of nearly $5 million per year— with potential increases in fugitive emissions through material handling and negligible, at best, reductions in emissions through fewer unplanned pressure relief device valve openings (Memorandum from Mike Remsberg and Ronald Hawks). Commenters provided a comparison of the EPA's estimated costs and industry's.

Response 2:

EPA agrees that screening is a critical factor to smooth furnace operation and avoidance of unplanned openings. EPA is not specifying where screening occurs and the extent of screening. Nonetheless, because screening is so critical, EPA is retaining the proposed work practice.

Comment 3:

[1631] Commenters stated that the proposed work practices that are already in place for a number of furnaces have not led to an appreciable reduction in unplanned PRD openings. Each BF is unique in its design, size, and pressure thresholds. Commenters stated that the only way to ensure that a BF could be operated with fewer than 5 unplanned PRD openings per year would be to install a new furnace with a different design and new capabilities of withstanding high levels of pressure built in and clean valves for the PRDs. With an older fleet and each with its own different pressure thresholds, avoiding unplanned PRD openings is not possible. However, an individualized operation and maintenance plan to ensure that a furnace is properly operated and maintained to minimize slips and avoid unnecessary gas build-up is appropriate.

Response 3: EPA's field experience is that unplanned openings have decreased over time as some of the work practices have been used to some extent at some furnaces. Ensuring these practices are used consistently at all affected furnaces will reduce HAP emissions.

Comment 4:

[1594] Commenters supported all proposed work practice requirements for BF unplanned valve openings.

Response 4: EPA acknowledges the support from the commenter.

3.1.2 Limit on number of unplanned openings

Comment 1:

[1631] Commenters stated that the EPA's intent to limit the number of unexpected events per year is not technically possible since by definition the events are "unplanned" and occur because

the PRDs are safety-related and automated to prevent a catastrophic pressure buildup that could lead to an explosion. Unplanned openings occur for a short duration (i.e., usually for a few seconds and under one minute), and their occurrence can neither be predicted, nor can the PRDs be eliminated as a source. If an unplanned PRD opening occurs, it is for the safety of the personnel and to protect the equipment; imposing constraints would create significant, dangerous safety risks unnecessarily.

[1631] Commenters stated that the most common cause of an unplanned PRD release is a sudden, unexpected furnace "slip." "Slips are caused initially by hanging or bridging of the burden material in the stack of the furnace. When this occurs, the material below the hang continues to move downward, forming a space that is void of solid material but filled with hot gas at very high pressure. This space continues to grow until the hang finally collapses. In severe cases, the sudden downward thrust of the hanging material forces the hot gas upward with the force of an explosion." This movement produces a pressure increase at the top of the furnace which may exceed the pressure setpoint. These events may last for only a few seconds or up to a minute in duration.

[1631] Commenters stated that because BFs are unique, the circumstances that cause slips will also vary by BF. Slip events can be instantaneous and catastrophic, leaving no time for operators to take corrective actions to avoid slips. Operator inattentiveness is rarely, if ever, a cause for slips. By the time burden in the furnace has started hanging, a slip is likely unavoidable. Blast furnace operators have developed procedures to reduce the number of potential unplanned PRD openings by studying events and optimizing the furnace pressure settings and PRD release operation. The changes, however, are unique to each BF and constitute a site-specific work practice. The practice is based on reaction time and PRD opening rate vs. measured top pressure. Site-specific improved monitoring and process reaction measures have been successful in reducing unplanned PRD opening events due to slips. The procedures followed by each facility can be addressed in a facility-specific "slip avoidance plan," as suggested by the EPA. The plan must, however, allow operational modifications to take place at the time an operational issue arises; what works for a particular event may not work when applied to future operations, and what works at one facility may not be effective at others.

[1631] Commenters stated that the PRDs are installed to allow gases under pressure at the top of the furnace shaft above the charge to be released to prevent an explosion. The pressure is normally controlled within a design setpoint via measurement and control of the hot blast air supplied as combustion air to the furnace and the withdrawal of combustion gas through the gas wash system producing BF gas for use as fuel in the BF stoves. The maximum allowed pressure is defined by the individual furnace design and structural limitations. The set point is largely based on what all the infrastructure of the furnace, furnace top, and gas system (piping and equipment) were designed to accommodate. The larger furnaces are more modern than small furnaces and therefore designed for higher top pressure operations. PRDs are installed to open if the pressure exceeds the design set point, releasing pressure for the safety of employees and the equipment. The volume of gas released is a function of the physical and chemical process causing the increase in pressure and the rate of pressure increase occurring.

[1631] Commenters stated that for all of these reasons, the EPA should not move forward with the proposed annual limit of 5 unplanned PRD openings.

Response 1:

The EPA acknowledges the information provided to further explain unplanned openings. These details are useful in understanding the nature of unplanned openings and their importance to the safety of the workers and furnaces. EPA has moved forward with subcategorization of blast furnaces into small and large, with separate limits for each category based on the performance of the top five furnaces, specifically the highest value in the top five. These separate limits were set to account for the differences in operations between larger and smaller BFs. AS explained in the preamble for this final rule, we are finalizing an operational limit for two subcategories of blast furnaces: large furnaces with a working volume of equal to or greater than 2,500 m^3; and small furnaces with a working volume of less than 2,500 m^3. For the large blast furnaces, we are finalizing an operational limit of four unplanned openings per rolling year per furnace. For small blast furnaces, we are finalizing an operational limit of 16 unplanned openings per rolling year per furnace. Both are based on a qualitative approach of using the highest number of unplanned openings from the top five performing furnaces (top four for large furnaces as there are only four operating large furnaces). This approach is appropriate because it accounts for variability among blast furnaces.
Additionally, we are finalizing the work practice standards proposed for both furnace subcategories that requires facilities to do the following: (1) install and operate devices (*e.g.*, stockline monitors) to continuously measure/monitor material levels in the furnace, at a minimum of three locations, using alarms to inform operators of static conditions that indicate a slip may occur, and alert them that there is a need to take action to prevent the slips and unplanned openings from occurring; (2) install and operate instruments such as a thermocouple and transducer on the furnace to monitor temperature and pressure to help determine when a slip may occur; (3) install a screen to remove fine particulates from raw materials to ensure only properly-sized raw materials are charged into the BF; and (4) develop, and submit to the EPA for approval, a plan that explains how the facility will implement these requirements.

Regarding safety, if the pressure reaches high enough levels, the valves can still open to mitigate the safety issues. Nevertheless, we conclude that if facilities apply the work practices, the number of unplanned openings can be limited to no more than 4 per year for large BFs and no more than 16 for the small BFs. It is our understanding that raw material processing and operating practices correlate with unplanned openings. For instance, industry commenters have stated that raw material screening reduces unplanned openings. Furthermore, operators who address a small hang in raw materials before it produces a large slip will reduce unplanned openings. The limit on the number of openings reflect is the requirements to perform certain upstream functions (such as the work practices described above) that greatly reduce or eliminate these openings, and these upstream actions are within the operator’s control. EPA expects that proactive actions in furnace operation will allow furnaces to meet the numeric limits and those proactive actions do not pose a safety concern. Additionally, the limits do not pose a safety concern as they are expected to be met by industry after applying additional work practices to minimize these openings.

Comment 2:

[1631] Commenters stated that the EPA should not move forward with any limitation on the number of unplanned openings of a safety device, and certainly not a limit of five per year. Commenters stated that industry's estimated costs make the work practice standards proposed unreasonable. The EPA has already determined that this source category poses no significant health risk—and it has done so with a reasonable margin of safety. For unplanned PRD openings, the EPA should have even less of a concern for human health risks. Commenters stated that because the size of the particulates released from unplanned openings are greater than 30 microns, while the emissions may be visible, they are not the size that would be inhalable or result in health risk (The Making, Shaping, Treating of Steel, 11th Edition, Ironmaking Volume).

Response 2:

The EPA is required by the *LEAN* decision to set a standard for unplanned openings as they are a measurable, fugitive source of emissions.

Comment 3:

[1627] Commenters stated that the EPA's proposed standards do not comply with the floor requirements of section 112(d)(3). The EPA states "Based on the data we received through the section 114 requests, the average number of unplanned openings of the best performing five furnaces in the source category is 5 unplanned openings per year. Therefore, we estimate that the MACT floor level of performance is 5 unplanned openings per year." 88 Fed. Reg. at 49,410. Commenters stated that floors under section 112(d)(3) must reflect the emission levels actually achieved by the relevant best performing 5 sources, those with the lowest emission levels. Sierra Club v. EPA, 479 F.3d 875. Commenters stated that the EPA's proposed floors give permission to emit uncontrolled pollution 5 times a year, and the does not appear to have attempted to find out which mills emit the least pollution from BFs or to have set a limit reflecting this emission level.

[1627] Commenters stated that the EPA's proposed standard does not require the maximum degree of reduction that is achievable, as required by section 112(d)(2). To comply with this section, the EPA needed to determine the maximum degree of reduction that is achievable. Assuming performance should be measured by the number of unplanned openings that occur, the agency needed to determine the minimum number of openings a source is capable of achieving, not just the number that sources – even the best performing sources – are achieving now when they have no regulatory obligation to limit unplanned openings.

Response 3:

The EPA set the MACT floor level work practice standard based on the top 5 best performing sources from both subcategories of BFs. Since this is the first time setting the standard for unplanned openings, the EPA determined the floor based on current performance of BFs.

Comment 4:

[1562] Commenters stated that the EPA's proposal for allowing 5 unplanned opens per furnace per year should be lower. Commenters believed that the number of unplanned openings can be reduced by applying the monitoring and work practice standards allowing for a lower number of

unplanned openings that is both achievable and cost effective. Commenters suggested two openings as an appropriate action level with the first opening triggering a root cause analysis and remediation and the second opening being a violation. Commenters believed that this will provide for more accountability in the operation of the BF and further reduce emissions.

Response 4:

The EPA set the MACT floor level work practice standard based on the top 5 best performing sources from both subcategories of BFs. Since this is the first time setting the standard for unplanned openings, the EPA determined the floor based on current performance of BFs.

3.1.3 Differences in furnace design

Comment 1:

[1631] Commenters stated that according to CAA section 112(d)(1), "[t]he Administrator may distinguish among classes, types, and sizes of sources within a category or subcategory in establishing such standards except that, there shall be no delay in the compliance date for any standard applicable to any source under subsection (i) as the result of the authority provided by this sentence." The EPA has established subcategories for many MACT standards, and this approach has been upheld by several court decisions including U.S. Sugar Corp. v. EPA in which the court upheld subcategories for boilers based on fuel and size citing the CAA provisions allowing the EPA to make subcategories based on "classes, types, and sizes" of sources. 830 F.3d 579 (D.C. Cir. 2016).

[1631] Commenters stated that with this definition, only four of the fourteen existing BFs would be in the "Large BF" subcategory: Indiana Harbor No. 7, Gary No. 14, Burns Harbor C, and Burns Harbor D, while the remaining existing BFs ("Small BFs") would be a separate subcategory. The three BFs with the fewest number of unplanned opening events based on 2021 data are three of the four proposed Large BFs.

[1631] Commenters stated that the above-defined Large BFs typically have no or very few unplanned openings each year due to design considerations which allow higher operating pressure near the valve openings. For example, Gary No. 14 operates at a top pressure of approximately 22 pounds per square inch (psi) whereas the smaller BFs at that facility operate with top pressures in the range of 5 to 6 psi. PRD openings are required to prevent catastrophic damage when top pressures inadvertently increase beyond the structural limitations of the system. The Large BFs are designed to operate at high top pressure, and the top and gas cleaning systems were also designed to operate at high pressure. The PRDs are set at correspondingly high pressures. Operational problems like slips may still occur, but they rarely result in PRD openings because the system is designed to accommodate higher pressures. This high pressure operation design was developed to increase production, not reduce PRD openings, but the overall result is that furnaces designed to these criteria are physically capable of fewer PRD openings, whereas those furnaces which were not designed this way are physically incapable.

[1631]Commenters stated that the larger subcategory of Small BFs (a working volume less than 2,500 m^3 are typically designed to operate at lower top blast pressures. Because of this, the top

and gas cleaning systems were not designed to withstand high pressures, and the PRDs must open when the top pressure becomes too high, or catastrophic damage will occur.

[1631]Commenters stated that this difference in pressure is not something that can be changed or modified in the existing blast furnaces. According to The Making, Taking and Treating of Steel: One of the limiting factors in attempting to increase the wind rate of a blast furnace is the lifting effect that is caused by the large volumes of gases blowing upward through the burden. This lifting effect (the mass flow rate) prevents the burden from descending normally and causes a loss rather than an increase in production. To increase production rates above normal, many furnaces are equipped with septum valves in the top gas system to increase the exit gas pressure. This increase in pressure compresses the gases throughout the entire system and permits a larger amount of air to be blown. With this increase in the quantity of air blown per minute, there is a corresponding increase in production rate; in addition, the formation of SiO is suppressed resulting in lower hot metal silicon content.

[1631]Commenters stated that in addition to production considerations when trying to increase operating pressure, the furnace shell, stove shells, dustcatcher, primary washer, and gas mains must have the structural integrity to withstand the increased top pressure. As this demonstrates, it is not possible to achieve the high top pressures in Small BFs that are not designed to withstand these operating conditions. As such, subcategories are warranted since this has a direct impact on the number of unplanned PRD openings.

Response 1:

EPA acknowledges this design difference in large and small BFs and is finalizing separate limits based on subcategorization into small and large BFs.

3.2 BF planned bleeder valve openings standards

Comment 1:

[1631] Commenters stated that the proposal requires weekly EPA Method 9 testing during planned PRD openings. This frequency is unnecessary based on the results of the 2022 section 114 collection that shows openings are already being properly managed through standard operating procedures and suggests that semiannual EPA Method 9 observations would be adequate and more frequent than the current EPA Method 9 testing requirements for BOPF shops and BF casthouse fugitives. Commenters stated that once a furnace has demonstrated that there are no concerns with opacity during planned PRD openings, the rules should provide for a reduced frequency. Other EPA regulations allow a decrease in frequency if no visible emissions are observed. For example, the Portland Cement MACT allows testing to be decreased from monthly to semiannually if six consecutive monthly tests have no visible emissions and a further reduction to annual if no visible emissions are observed during a semiannual test. 40 CFR 63.1350(f)(1). Commenters submitted that semiannual EPA Method 9 observations would be adequate but requested, in the alternative, similar provisions to allow a decrease in monitoring frequency for sources with no visible emissions and suggest monthly as the initial Method 9 testing frequency.

Response 1:

The EPA agrees that, as proposed the regulatory language at 40 CFR 63.7821(i) is confusing as to the frequency at which opacity observations are required. For the final rule, the regulatory text has been revised to clarify that opacity observations are required with each planned opening, without a weekly follow-up requirement.

Comment 2:

[1631] Commenters stated that to the extent an opacity limit is required, the EPA must also acknowledge the inherent challenges in conducting EPA Method 9 observations, particularly where a PRD opening must be initiated with little time between planning and operator opening. Because planned openings are often not planned much in advance, and because certified VE readers may not always be readily available, requiring weekly testing is a challenge (and particularly unreasonable given that it is also not necessary). In addition, planned PRD openings may occur during the night when conducting an EPA Method 9 is not possible. A reasonable clarification would be to specify that EPA Method 9 observations for planned PRD openings are required only for events occurring during daylight hours where a facility knows or has reason to know that a planned opening will occur at least two hours in advance of the initiation of the planned PRD opening, consistent with the 2022 ICR and an EPA Consent Decree. The following language (previously approved by EPA in a Consent Decree) would address this concern: Opacity tests are required only for events occurring between 8 a.m. and 3 p.m. Monday through Friday, excluding holidays, and when the blast furnace operator knows or has reason to know that a planned opening will occur at least two hours in advance of the initiating the planned bleeder valve opening.

Response 2:

The EPA disagrees that, opacity observations should be limited to the time frame noted by the commenter. It is technically feasible to perform EPA Method 9 observations at any time the sun can be oriented in the 140° sector behind the back of the observer. The EPA does agree that EPA Method 9 is not appropriate after dark and have amended the regulatory text at 40.CFR 63.7823(f)(2) to reflect that readings shall not be taken before sunrise or after sunset.

Comment 3:

[1631] Commenters stated that the proposal would require that the VE observation during an EPA Method 9 test continue until the conclusion of the planned opening "event," which is not a defined term. Because PRD planned openings can go on for several hours at a time and because emissions diminish over time, the EPA should not require the observation to extend beyond the first two six-minute block averages, which would represent the highest readings for an event. The reader will have more than enough information at that point to determine whether the readings indicate the level of opacity and whether it was within the limit. Additional readings would not provide useful information. The following language would provide the appropriate clarification on this point:

Conduct opacity observations in 6-minute block averages starting as soon as event begins and ending *a minimum of 12 minutes later to allow for two six-minute block averages to be recorded* ~~3 minutes after the event ends~~.

Response 3:

The EPA agrees with the commenter that as proposed, the regulatory language provided an unclear definition of when to cease opacity monitoring. The EPA has amended the final rule at 40 CFR 63.7823(f)(2) to require that opacity monitoring continues until either the bleeder valve has closed, sunset, or after the first 6-minute block average where all readings are zero percent opacity, but in no case less than a 6-minute observation.

Comment 4:

[1627] Commenters stated that because the EPA expects the opening to last only two minutes, a six-minute opacity average allows very high emissions during those two minutes with the other four minutes averaged in at zero opacity. An eight percent opacity level allows even more of the individual readings during those two minutes to be at 10 percent opacity or greater. Commenters stated that the EPA's rounding policy exacerbates this problem. The EPA calculates the maximum opacity values to be 7.75 percent and rounds to 8 percent, but there is no decimal point expressed so an average opacity of 8.499 percent will be considered a pass. Commenters stated that the EPA should express the opacity limit as a three-minute average rather than a six-minute average and should require all planned bleeder openings be monitored using DOC II techniques, not just one per week.

Response 4:

The EPA disagrees with the commenter that the standard is inappropriately set. The data used to determine the 8 percent opacity standard were six-minute averages. If the EPA was to reduce the time scale further, the limit would be correspondingly raised as a result. The EPA is finalizing as proposed six-minute averages for opacity. The EPA agrees with the commenter that as written the language at 40 CFR 63.7821(i) is confusing and that opacity observations should be required for each planned opening, where technically feasible, and have amended the proposed regulatory text accordingly.

The EPA disagrees that ASTM D7520-16 should be required for use, as explained in the response to Section 2.1 Comment 16, but is finalizing the use of ASTM D7520-16 as option for demonstrating compliance in addition to EPA Method 9.

Comment 5:

[1631] Commenters stated that a concern with the proposed 8% opacity limit, and the failure to account for each BF's unique design and operational variability, is the inherent variability in Method 9. Until recently, and even predominantly today, opacity limits have been at 20% (based on Method 9) for normal operations in most states, with some additional allowance for higher opacity readings for limited time periods. The variability around the limit will increase as the limit is tightened. The EPA stated that Method 9 readings (and readers) are variable. This is evidenced by the fact that the EPA will "certify" a Method 9 reader if the reader's average accuracy when reading black and white plumes of known opacity is within 7.5% (EPA, Guidelines for Evaluation of Visible Emissions, Certification, Field Procedures, Legal Aspects, and Background Material) and provided that no individual reading during the certification test deviates by more than 15% from the known opacity. *Id*. Commenters stated that if a reader can

be certified even if readings are off by 15%, applying that to an 8% standard is problematic and calls for statistical adjustment to recognize test variability.

Response 5:

The EPA disagrees with the commenter that a limit of 8 percent opacity is not appropriate. Opacity emissions standards as low as 10% have been in place since at least 1995 (60 FR 65416) in 40 CFR part 60 subpart Cb. The EPA also disagrees with the commenter's assertion as to the variability of the method. The variability of the method is not assessed on an individual reading, but upon that of the data set, the six minute reading. The 15% reading allowance during the certification is that for a single reading over either white or black smoke readings during the certification process. The precision of EPA Method 9 was studied in depth in *Evaluation and Collaborative Study of Method for Visual Determination of Opacity of Emissions from Stationary Sources* (EPA-650/4-75-009) available in the docket (EPA-HQ-EPA-2002-0083). This study determined an accuracy of 3.13% opacity and a precision (between observer standard deviation) of 2.42% opacity. The EPA is making no changes to the rule as a result of this comment.

Comment 6:

[1627] Commenters stated that the EPA should not allow steel mill owners' practice of deliberately opening bleeder valves and venting uncontrolled toxic pollution. With greater ability to control operating parameters during planned releases, there is an opportunity to route these emissions to a primary control device. Commenters stated that the EPA should require emissions from planned bleeder valve openings to be captured and routed to a control device unless the Agency can demonstrate that it is not feasible to do so. The EPA does not consider this possibility or explain why it could not be done. Commenters stated that because the EPA does not claim it is not feasible prescribe or enforce a numeric limit for emissions from BFs valves, the Agency has not met the statutory prerequisite for setting work practice requirements in lieu of emission standards and its failure to set numeric emission standards is unlawful and arbitrary.

[1592; 1496] Commenters stated that enhanced workplace standards are important and appropriate, but should be supplemental regulatory requirements. Work practices should require specific numeric performance standards and be verifiable. Further, work practice standards are permissible in lieu of a HAP emission standard only if "it is not feasible in the judgment of the Administrator to prescribe or enforce an emission standard." 42 USC 7412(h)(1). The CAA defines "not feasible to prescribe or enforce an emission standard" as a situation where:
(A) a hazardous air pollutant or pollutants cannot be emitted through a conveyance designed and constructed to emit or capture such pollutant, or that any requirement for, or use of, such a conveyance would be inconsistent with any Federal, State or local law, or
(B) the application of measurement methodology to a particular class of sources is not practicable due to technological and economic limitations. Id. at § 7412(h)(2). The CAA mandates numerical emission standards wherever feasible. Id. at § 7412(h)(4). As stated above, technologies are available to collect, capture, and treat pollution or enclose emissions sources. To the extent that work practices, in addition to numeric standards, would help prevent or reduce emissions, the CAA would require their promulgation.

Response 6:

The EPA disagrees with the commenter that we have not considered the routing of emissions nor the application of emissions measurements. As noted in the preamble of the proposed rule section IV.A.2, planned openings occur in order for facilities to perform repairs or other maintenance. The valve opening is necessary to ensure that no pressure remains on the system when workers must make an entry or open the system to atmosphere in order to protect their safety. Prior to the planned opening, and unlike an unplanned opening, the furnace is turned to low idle before the valves are opened to lower emissions. The time period at which emissions occur during an unplanned opening is too short (on the order of two minutes as noted by the same commenter), rendering normal source test measurement methods unusable, which is why an opacity standard was developed for unplanned openings, it is a test method which can adapt to the short duration of the emissions. The EPA is finalizing an opacity emissions standard as proposed for planned openings.

3.2.1 Proposed opacity limits for planned openings

Comment 1:

[1631] Commenters stated that in Table 2 of the proposed rule, Initial Compliance With Emission and Opacity Limits (Row 16) states "You must not cause to be discharged to the atmosphere any emissions that exhibit opacity greater than 8 percent (6-minute average)." Commenters noted that in Table 3, Continuous Compliance With Emission and Opacity Limits (Row 16), states this same proposed limit as 5% (6-minute average). Commenters assumed that this was a typographical error and that the proposed action is consistent with the preamble language referencing 8%. In any event, while the EPA assessed a BTF standard of 5% opacity, the EPA did not recommend or propose a 5% standard.

Response 1:

The EPA has corrected the typographical error in the proposed Table 3 to match Table 2 at 8% opacity in the final rule.

Comment 2:

[1631] Commenters stated that the EPA established no official work practice standards for planned PRD openings. The EPA did suggest, however, that if BF operators undertake "suggested" actions before opening PRDs, such as: (1) tapping as much liquid out of the furnace as possible; (2) removing fuel and/or stopping fuel injection into the furnace; (3) reducing air/wind to 5 pounds psi bottom pressure; and (4) adding steam into system at various places where there is insufficient draft, mostly near the scrubber and dust catcher. If these measures are taken, the EPA expects that emissions during planned PRD openings should be reduced. Commenters stated that the EPA failed to establish any correlation between these suggested actions and opacity levels. Therefore, if all of these voluntary actions are implemented, planned PRD openings may still have VE exceeding 8% opacity. Commenters stated that because BFs that the EPA identifies as "the best performing units" have recorded observations of opacity greater than 8% with all of the identified actions being implemented, the 8% standard is neither justified nor reasonable (Historical Method 9 data for the Dearborn facility).

[1631] Commenters stated that this is further exemplified by looking at all of the sources comprising the MACT floor and which work practices are already in place. Three of the five best performing sources based on the 2022 Method 9 data use all of the EPA's "suggested" operating practices intended to minimize opacity: Gary, Middletown, and Granite City. Using this limited dataset, the maximum six-minute average opacity from these sources are 0%, 13.75%, and 10.42%, respectively. Therefore, the data shows no correlation between the suggested actions and an opacity limit of 8%.

Response 2:

EPA acknowledges that most or all facilities already use some of the suggested actions and emit varying levels of opacity. This variability is caused primarily by variability in the implementation of the suggested actions. For instance, operators generally try to reduce bottom pressure, but in practice use bottom pressures that vary, sometime far higher than 3 to 5 psi (and thus far more emissive), and are not consistently achieving the lowest possible pressure. EPA anticipates that if these suggested practices are performed uniformly and to the maximum degree practicable, the opacity limit can be met.

Comment 3:

[1627] Commenters stated that to the extent the EPA's requirements can be characterized as numeric emission limits, they do not satisfy section 112(d)(2). The EPA claims the proposed 8% opacity limit with a 6- minute averaging time is the floor under section 112(d)(3), but does not show that this limit requires the maximum degree of reduction that is achievable. In discussing the proposed new source limit, the EPA indicates that a zero percent opacity limit is possible and is currently being achieved by at least one existing source. Commenters stated that nonetheless, the EPA does not propose a zero percent opacity limit or even a 5% opacity limit, claiming "We are not proposing the BTF option of 5 percent opacity for existing sources because we assume 5 percent opacity may not be feasible for some sources on a consistent basis. 88 Fed. Reg. at 49,411.

[1627] Commenters stated that the statute mandates the "maximum" degree of reduction that is "achievable." 42 USC 7412(d)(2). Commenters stated that the EPA has an obligation to demonstrate with substantial evidence assumptions about what "may not be feasible," and that the standards require the maximum degree of reduction that is achievable. Commenters stated that the EPA cannot rewrite the statute to require that limits be achievable by every source; a standard is achievable if it is achievable by the industry as a whole.

[1627] Commenters stated that all sources may not be routinely achieving zero percent opacity or 5% opacity now, but the EPA knows that at least one is achieving zero percent opacity. Further it has identified measures that sources can take to "minimize" opacity during planned bleeder valve openings.

In the proposed rule preamble, EPA said they determined based on evaluation of available information that emissions can be minimized from bleeder valve planned openings cost effectively by implementing various actions before the valves are opened such as: (1) Tapping as much liquid (iron and slag) out of the furnace as possible; (2) removing fuel and/or stopping fuel injection into the furnace; and (3) lowering bottom pressure.

[1627] Commenters stated that since at least one source is already achieving zero percent opacity during planned bleeder valve openings, the EPA needs to provide some record basis for assuming that others cannot achieve better than 8% opacity through the measures the agency itself has identified to minimize emissions or other measures. Commenters stated that the EPA has not done so and, as a result, its proposed limit is unlawful and arbitrary.

Response 3:
As EPA explained in the preamble, based on our evaluation of public comments and available information, pursuant to CAA section 112(d)(2) and (3) and the *LEAN* court decision, for existing sources we are promulgating a MACT Floor limit of 8 percent opacity for any 6-minute averaging period for the BF planned bleeder valve openings. This 8 percent opacity is the average of the top five sources based on the data we have. For new sources, we are promulgating an opacity of 0 percent because based on the available data, the best performing single source had opacity of 0 percent during the planned opening, which we consider the MACT Floor level for new sources pursuant to CAA section 112.

As we explained in the proposed rule preamble, we determined based on evaluation of available information that emissions can be minimized from bleeder valve planned openings cost effectively by implementing various actions before the valves are opened such as: (1) tapping as much liquid (iron and slag) out of the furnace as possible; (2) removing fuel and/or stopping fuel injection into the furnace; and (3) lowering bottom pressure. However, as explained in the proposed rule preamble, we did not propose any specific work practices for the BF planned bleeder valve openings and we are maintaining the decision to not require any specific work practices for the final rule. Facilities will have the flexibility to choose an appropriate approach to meet the opacity limit.

3.2.2 Potential UPL approach for opacity limits

Comment 1:

[1631] Commenters stated that the preamble states that the EPA did not use a UPL approach to establish the 8 percent opacity limit as a MACT floor for planned safety device openings. Instead, the EPA used a simple averaging method. Commenters stated that this approach is flawed. The analysis deviates from how pollutant-specific MACT limits are computed to appropriately account for variability that occurs within the best performing sources. That the best performing sources cannot achieve the proposed limitation consistently should be a signal to the EPA that the limit is flawed. Commenters stated that the EPA admits that, for a proper MACT floor under section 112(d)(3), when looking to the best performing sources, those best performers must be able to meet the proposed standard. Commenters stated that the EPA needs to determine what performance the "best performers" are actually achieving. While the UPL is one way of addressing variability, where there is evidence that the best performers are not in fact achieving a standard, the EPA is not free to ignore that information simply because it applies a UPL analysis.

[1631] Commenters stated that the EPA should also recognize that using a simple mathematical average eschews a fundamental element that the Agency has for years recognized as important—taking into account the variability that the best performers will inevitably exhibit if testing was

conducted over a long period of time (particularly where the EPA excludes data from longer periods of time as it has here). While several aspects of variability in performance need to be considered in assessing what the best performers are achieving in practice, the EPA has at least historically accommodated test result variability for the best performing sources by applying statistical methods like the UPL.

[1631] Commenters stated that using an average is the equivalent of a 50% confidence interval, whereas a UPL analysis would provide a 99% confidence level (for the variability issues that it addresses). Commenters stated that it is arbitrary and capricious for the EPA to establish an enforceable limit on this basis as if the best performers are achieving that level for 8,760 hours per year. Only two of the furnaces in the MACT floor could comply with the 8 percent limit according to Table B-2 of the EPA's 2023 UFIP Memo. Based on standard UPL/MACT floor methodology, floor sources should already be in full compliance with the proposed limit, and that is not the case here.

[1631] Commenters stated that the consequences of a violation of the stringent opacity limit are significant, and with a 6-minute averaging period, it would be easy to run up a host of violations and a large tally of fines.

[1631] Commenters stated that the EPA states, "we did not apply the standard UPL approach … because that method has not been used in the past when calculating opacity limits." The EPA's stated purpose of the UPL is "to reasonably estimate the emissions performance of the best performing source or sources to establish MACT floor standards," (Limited Datasets Memo).

[1631] Commenters stated that the probability of future tests of those sources complying with the limit is well under 50 percent over time, and acknowledged that the EPA recognizes that arithmetic means are not an acceptable method of establishing a MACT floor:
If EPA were to simply take the average of the stack test data from the best performing source or sources, the MACT floor would not represent the levels of emissions achieved in practice over time because the MACT floors would not reflect variations in material inputs (e.g., fuels), control device performance, operating unit performance (e.g., changes in combustion conditions that impact emissions), and other factors that affect unit performance over time. This is demonstrated by the fact that even single three run tests, which are performed over a short period of time, typically show different emissions levels during each individual test run. It would not be reasonable to establish a MACT floor standard that the best performing sources would exceed routinely. (Use of the Upper Prediction Limit for Calculating MACT Floors).

[1631] Commenters stated that, as noted above, it is appropriate and acceptable to apply a UPL methodology for the proposed limits in this rulemaking. The UPL is a standard statistical analysis that can be used for any data set. The EPA has stated, "[t]he UPL is used in a wide variety of industries and professions, such as manufacturing, finance, healthcare and others." *Id*. This methodology is not unique to stack testing, nor is there a reason it could not be applied to the proposed UFIP limits.

[1631] Commenters stated that while the results of a Method 9 test are evaluated based on an average of 15-second readings versus three 1-hour runs, the readings still demonstrate variability

of emissions over a short period of time. These datasets are not sufficiently different that would render application of a UPL methodology inappropriate or unacceptable. Furthermore, it is worth noting that the EPA has utilized a UPL for establishing limits using CEM data in the Portland Cement MACT Rule. Commenters stated that while the EPA states that their UPL approach is based on three-run stack tests, this methodology has in fact already been extended to other types of data, and there is no reason that a UPL cannot be applied to these datasets.

[1631] Commenters stated that to achieve the goals of the CAA, the EPA is required to establish limits that are achievable for the best performing sources, and properly follow EPA MACT floor precedent. Therefore, a UPL should be utilized to establish the UFIP limitations in this rulemaking.

Response 1:

The EPA disagrees with the commenter that a UPL approach is appropriate for opacity. As discussed in detail in the preamble to the final rule for the casthouse, the EPA has historically used the UPL approach to develop MACT limits for stack emissions of individual pollutants, but has not historically determined opacity limits using a UPL approach. The UPL calculation introduces a predictive element to the statistics in order to account for variability. However, unlike typical emissions testing, EPA Method 9 may result in values of zero, which cannot be used in the UPL calculation. Additionally, in the case of opacity measured according to EPA Method 9, while the observation period may be longer, the individual readings, taken at 15-second intervals, are averaged in 6-minute (or 3-minute as called for in a particular standard) intervals throughout the required observation period. The maximum average determined over the sampling period is then compared against the standard, The data EPA reviewed to set this standard is the maximum 6-minute (or 3-minute as applicable) average evaluated over the entire test period. Utilizing this maximum short-term average during each test period to set the standard, inherently accounts for some variation in the data used to set the standard, as it reflects the maximum of the 6-minute averages over the test period rather than the average over the entire test period as is typical for non-opacity emissions testing. In determining the standard, the EPA reviewed all submitted data for planned openings during the CAA section 114 request. We also averaged up to the next whole number, and are setting the standard as a whole number, with no decimals in order to further account for variability. The EPA is finalizing the standard at 8% opacity as proposed. More details are provided in the technical memo titled: “Unmeasured Fugitive and Intermittent Particulate Emissions and Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF” (UFIP Memo), which is available in the docket for this final rule.

Comment 2:

[1631] Commenters did not agree that an opacity limit is appropriate for planned PRD openings, but stated that if the EPA were to move forward with an opacity limit, the limit should be based on at least one full year of data that allows a statistical analysis that is consistent with the EPA’s May 20, 2003 preamble-stated data criteria, which include appropriately accounting for seasonal weather condition variations and process variabilities. Based on a 99% UPL-based calculation of available data from the 2022 ICR snapshot data for planned PRD opening opacities, the opacity limit would be 14.4% (Memorandum from Susan Barnes). EPA Method 9 compliance demonstrations against existing state SIP opacity limits (or a properly established UPL limit) on

a semiannual frequency can be used to confirm the appropriateness of BF-specific operating procedures addressing PRD openings.

[1631] Commenters provided the methodology used for their calculated UPL-based suggested opacity limit of 14.4%.

Response 2:

As discussed in detail in the response to comment 1 of this section and the preamble to the final rule with respect to the opacity standards for the casthouse, the EPA disagrees that the UPL approach is appropriate for opacity as discussed in the previous response. The EPA is finalizing the standard at 8% opacity as proposed.

3.2.3 Suggestions for work practice regulations

Comment 1:

[1631] Commenters stated that the proposed opacity limit is problematic and not adequately based on the record. In addition, planned PRD openings qualify for a work practice standard under CAA section 112(h). Commenters stated that as a result, a work practice standard in lieu of the numerical opacity limit being proposed is more appropriate. In addition, a work practice standard would be more meaningful because it is aligned with the continuous improvement concept that guides operations.

Response 1:

The EPA acknowledges the suggestion for work practices in lieu of a numerical opacity limit for planned openings, however we are moving forward with the proposed opacity limit. As we have received emissions data from facilities in the form of opacity, EPA decided it was appropriate in this case to set a numerical standard for the MACT floor under CAA Section 112(d)(2)/(3) that reflect that application of good practices and operations to minimize emissions. This proposed opacity limit was based on a MACT floor analysis of the submitted opacity data and is therefore an adequate standard. We described some potential work practices that facilities can apply to minimize emissions and therefore comply with the opacity limit, however, we decided to not require prescriptive work practices for this emissions source, but instead set an opacity limit and allow facilities flexibility regarding which work practices or other actions they need to apply to meet the opacity limit.

Comment 2:

[1631] Commenters stated that the proposal appropriately excludes any specific work practice standards for minimizing planned PRD openings. Each BF is unique, and all companies have established BF-specific standard operating procedures to minimize potential emissions from planned PRD openings. Examples include stopping tuyere fuel injection and reducing hot blast pressure to the BF-specific value prior to a planned PRD opening. Note that these are examples only and would not be appropriate for every BF. Commenters stated that to the extent the EPA would include work practices in lieu of an opacity limitation, the Agency should generally require facilities to operate in accordance with procedures identified in an O&M plan tailored to the individual, unique BFs that include operationally acceptable operating parameters such that

visible emissions are minimized during planned PRD openings without incurring adverse effects on safety and furnace operations.

Response 2:

The EPA acknowledges the suggestion for work practices specific to each BF for planned openings. However, EPA is finalizing an opacity limit for planned openings (as explained in the response to the previous comment), and allowing facilities to determine what actions (e.g., work practices) they need to apply to achieve the opacity limit.

Comment 3:

[1562] Commenters believed that the EPA identified actions that could reduce emissions during planned openings, specifically: “We also determined based on evaluation of available information that emissions can be minimized from bleeder valve planned openings cost effectively by implementing various actions before the valves are opened such as: (1) Tapping as much liquid (iron and slag) out of the furnace as possible; (2) removing fuel and/or stopping fuel injection into the furnace; and (3) lowering bottom pressure."

Response 3:

The EPA acknowledges the work practices suggested by the commenter and encourages these work practices to be implemented to meet the opacity limit of 8%, as appropriate for each specific BF. However, (as described in previous responses) we are only requiring the 8% opacity limit in the rule and no specific work practices.

Comment 4:

[1594] Commenters stated that it is not insignificant that planned bleeder valve openings occur approximately fifteen hours per week resulting in an estimated 1.6 tpy of HAP metals. Commenters stated that the EPA should not be leaving up to operators the flexibility to choose the appropriate approach to meet the opacity limit, and should, in addition to the eight percent opacity limit, propose work practice standards that reduce the 1.6 tpy of HAP metals produced by BF planned bleeder valve openings.

Response 4:

The EPA acknowledges the suggestion of implementing work practices suggested by the commenter and encourages these work practices to be implemented to meet the opacity limit of 8%. However, we are only requiring the 8% opacity limit in the rule.

3.3 BF and BOPF slag processing, handling, and storage standards

Comment 1:

[1631] Commenters stated that the EPA has proposed a BTF opacity limit of 5 percent (6-minute average). While commenters did not agree that an opacity limit is needed for slag operations given the very low emissions, if the EPA were to move forward with an opacity limit, the limit should be based on at least one full year of data that allows a statistical analysis that is consistent with the EPA’s May 20, 2003 preamble-stated data criteria, including appropriately accounting

for seasonal weather condition variations and process variabilities. Based on a 99 percent UPL-based calculation of available data from the top five best-performing units from data provided in the 2022 ICR for slag operations, the opacity limit would be 20 percent. With the limited opacity data available for slag pit operations, the use of a UPL is particularly important. This result is similar to existing, federally enforceable 20 percent (6-minute average) opacity limits established through state implementation plans. Commenters provided their methodology for their UPL calculation of 20 percent.

The proposed 5% opacity limit for slag handling operations should not be adopted. It is virtually impossible to enclose the extremely hot slag material or to universally apply water at all times to help suppress emissions because of the volatile nature of the material and the potential for a life-threatening hazardous explosion when the water violently expands in the form of steam. EPA ignores these important safety concerns. EPA has not identified controls that could reasonably be utilized to meet a 5% opacity limit. Even implementing EPA's suggested measures, a UPL analysis results in an opacity limit of 20%, far exceeding the proposed 5% level. There is no question that variability exists, yet EPA states that it is not applying a UPL or other statistical analysis because it has never done so for opacity.

Response 1:

EPA acknowledges the potential safety and other concerns with the 5 percent slag opacity limit. EPA is finalizing an opacity limit of 10 percent based on a MACT floor analysis for existing sources. The 300+ readings of opacity data collected from the 2022 section 114 collection requests indicate that most opacity readings (based on 6-minute averages) done at slag processing in 2022 were below 10 percent. Therefore, we conclude that opacity can be maintained below 10 percent safely.

Comment 2:

[1627] Commenters stated that in addition to setting limits that reflect the use of the control measures the EPA has identified, the EPA could require the use of these measures as work practices. It appears that the EPA did require at least some of them in the version of the proposed rule that the EPA sent to OMB but that OMB deleted these requirements. The OMB redline version of the EPA's UFIP memo shows the following edits by OMB:
Work Practices for BF Slag Handling and Storage Operations

- Limit opacity to 5 percent, as 6-minute average;
- ~~Use a water system over pit areas, and apply water to maintain moist slag and reduce emissions during digging and dumping; and~~
- ~~If the opacity of slag dumping, loading, and digging events exceed 5 percent opacity for 2 6-minute events in one week, subsequently install and use water fog spray systems over that excess emission operation, applying the fog spray to each dump of slag to a pit or pile, each loading of slag, or during all digging activities, except on days that, due to weather conditions, applying fog spray would pose a safety risk.~~[91]

[1627] Commenters stated that OMB should not override the EPA's judgment by deleting emission reduction measures the EPA has found to be cost-effective, and the EPA's acceptance of such interference is disappointing given the absence of any explanation for deleting these requirements. Neither the EPA nor OMB suggests either of these requirements is ineffective or

too costly. Commenters stated that Congress delegated to the EPA, not OMB, the authority and obligation to implement that CAA, and it is the EPA's job to exercise the discretion it was given to regulate steel mills and to provide a rational basis for its rulemaking decisions. By merely accepting OMB's redline edits without explanation, EPA surrenders its authority to OMB and fails to do its job. EPA's failure to provide a rational basis for not requiring that steel mills use the work practices identified to minimize emissions from slag handling, processing, and storing is arbitrary and capricious.

[1562] Commenters stated that EPA should include the work practices it identified as part of the MACT standard.

Response 2:

The EPA is finalizing an opacity limit of 10 percent based on 6-minute averages for BF and BOPF slag processing, handling, and storage, and slag pits. EPA is not finalizing work practice standards for this source to allow facilities flexibility in which practices they use to meet this opacity limit. This decision was made in acknowledgement of operational differences between facilities.

Comment 3:

[1594] Commenters supported the EPA's proposal for work practice requirements for BF slag processing and handling. Commenters agreed with the EPA's reasoning that these work practices outlined can help reduce or minimize HAP and PM emissions.

Response 3:

EPA acknowledges the support and agrees that work practice requirements for BF slag processing and handling will help reduce and minimize HAP and PM emissions.

Comment 4:

[1631] Commenters stated that the proposal requires weekly Method 9 testing for each of the five slag processing, handling, and storage operation for a BF or BOPF. This frequency is unnecessary. Once an operation has demonstrated that there are no concerns with excess VE, the rules should provide for a reduced frequency for Method 9 testing. Other EPA regulations allow a decrease in frequency if no VE are observed. For example, the Portland Cement MACT allows testing to be decreased from monthly to semiannually. (72 40 C.F.R. § 63.1350(f)(1).) Commenters requested similar provisions to allow a decrease in monitoring frequency to semi-annually for sources if compliance is demonstrated for six consecutive months, and commenters also suggested monthly, rather than weekly, as the initial Method 9 testing frequency.

Response 4:

The EPA disagrees that the comparison to the Portland Cement MACT (PC MACT) are appropriate. As indicated at 40 CFR 63.1350(f)(1), the standards for portland cement are visible emissions rather than opacity. For the EPA Method 22 readings that are required in PC MACT, there can be no visible emissions detected in order to be granted the reduction in frequency of readings. Slag processing as a waste rather than a product, is inherently more variable than the

materials involved in portland cement. As such, the relative frequency is appropriate, and the EPA in finalizing the frequency of measurement as proposed.

Comment 5:

[1627] Commenters stated that the EPA should require continuous monitoring during active slag handling with a significant number of initial DOC files reviewed to determine a pool of photos that meet with Method 082 camera protocols and random selection of photos to be processes. Camera placement would appear to be simpler for these sources than some others. Prompt detection of violations and a sharp escalation of the number of photos sent for outside analysis should lead to a corrective response by the company.

Response 5:

EPA acknowledges the commenters input requesting that we require continuous monitoring of opacity during active slag handling. EPA finds it important that any continuous monitoring procedure, be well defined and include a detailed set of procedures for the operation of the opacity monitoring device to ensure accurate and precise measurements. While there is not a current standard approach for continuous fugitive monitoring for opacity, an owner or operator could petition the Administrator for an alternative test method under § 63.7(f) to use a continuous opacity monitor.

There is no change to the proposed rule as a result of this comment.

Comment 6:

[1575] Commenters stated that the proposed revised regulations limit emissions to 5 percent opacity, instead of the current 20 percent. The EPA certified the 'human based' Method 9 for opacity measurements, where trained and certified observers determine opacity from visual inspections. However, 5 percent opacity is in the lower detection limit of Method 9's accuracy range. Additionally, a study from 2004 by McFarland, et al found that observer error is highly sensitive to weather conditions, and can range between 4-12 percent.

[1575] Commenters stated that advances in technology led to a second, provisionally EPA-approved digital camera opacity technique (DCOT) – for example, ASTM D7520-09 and ASTM D7520-16. Early testing showed that DCOT is similar in efficacy to Method 9, depending on weather conditions: In some cases DCOT surpassed Method 9, and in others observers were more effective than DCOT. DCOT was found to be "statistically interchangeable" to Method 9, even for large, industrial-scale stacks. Like Method 9, DCOT must comply with the requirement that "For each set of 25 plumes, the user may not exceed 15 percent opacity of any one reading and the average error must not exceed 7.5 percent opacity."

[1575] Commenters stated that the current accuracy requirements for either Method 9 or DCOT cannot satisfy the proposed opacity limit of 5 percent. Clearly, the uncertainty in determining opacity of 7.5 percent by either method could raise doubts regarding reading validity when applied to a regulatory level of 5 percent. Some commenters may claim that the inability of either method to satisfy the 5 percent opacity limit is a reason to reject or revise this measure.

[1575] However, commenters argued the opposite: Limiting opacity would save many lives and benefit the health of numerous more. Rather than rejecting the measure, the EPA should require the use of DCOT-based opacity measurements:

- Both DCOT and Method 9 are similarly accurate at this stage. Therefore, requiring the use of DCOT for implementation of the opacity limits would not disadvantage Iron and Steel manufacturing facilities.
- Camera-based opacity technologies inherently document and preserve visual data of emission events. This documentation will enable revisiting contested pollution events, for example if the regulatory opacity limit is exceeded. Method 9 observations cannot be re-tested.
- The accuracy of Method 9 is limited by human vision and judgment, and cannot be improved. On the other hand, digital camera technologies, and in particular software developments, offer immeasurable advances to DCOT. Re-tooling accuracy levels for currently available software (such as Digital Opacity Compliance System -DOCS II SaaS from Virtual Technology LLC) should be a relatively simple process. In addition, a number of recent papers suggest potential new tools with advanced capabilities.[47]
- The accuracy of DCOT is currently set by regulations. Current digital camera resolution is high enough to supply reliable images. Updating the software to provide better accuracy should be easily achieved. Therefore, installing DCOT now will provide the same accuracy set by EPA, and can easily be updated once revised software tools become available.

[1575] Commenters stated that one claim is that EPA Method 9 is reliable and has been used in the steel industry for decades. However, many manual operations in different industries have been successfully replaced by digital technologies since the initial approval of Method 9 in 1975. There is no reason to exclude opacity tests from such modernization.

[1575] Commenters stated that another claim is that DCOT is not more accurate or reliable than Method 9. However, while Method 9 accuracy cannot be changed due to its reliance on human senses, DCOT accuracy is set by the current EPA regulations and can greatly improve if required by stricter certification requirements. Increasing DCOT accuracy does not require better camera technologies, only an update of the analysis software. Therefore, systems installed at this time could easily be updated once such a requirement is in place without costly hardware replacements.

Response 6:

EPA acknowledges the commenters input requesting that we require the use of DCOT during active slag handling. EPA finds it important that any opacity monitoring procedure, be well defined and include a detailed set of procedures for the operation of the opacity monitoring device to ensure accurate and precise measurements. While there is not a current standard approach for DCOT on open fugitive sources such as these, an owner or operator could petition the Administrator for an alternative test method under § 63.7(f) to use a DCOT system once a standard approach is developed. There is no change to the proposed rule as a result of this comment.

3.3.1 Feasibility of proposed opacity limit

Comment 1:

[1597] Commenters stated that the EPA has determined that it is necessary to reduce the UFIP from the handling, storage and processing of blast furnace and basic oxygen furnace slag even though the EPA determined the overall risk for this source category to be low and protective of public health with an ample margin of safety. Commenters stated that the EPA established a 5 percent opacity limit for VE from BF and BOPF slag handling, storage and processing after review and analysis of VE readings submitted by seven of the eight operating facilities.

[1597; 1631] Commenters stated that the EPA "determined based on evaluation of available information that emissions can be minimized from slag pits cost effectively with the application of water spray or fogging." (88 Fed. Reg. at 49412.) It is an incorrect assumption that UFIP emissions from slag handling, storage and processing can be controlled to a consistent 5 percent opacity for VE.

[1597] Commenters stated that the EPA's driving force to establish an unreasonable BTF opacity limit on slag handling, storage, and processing, originates from an overestimation of PM and HAP emissions from these operations, and the resultant inflated estimated benefits from stricter limits.

[1631] Commenters stated that three of the five best performing sources are unable to meet the proposed limit of 5 percent, and provide a table to illustrate this. It should also be noted that the best performing source (Granite City A) only has two available tests in the ICR period due to being idled in 2020, making data insufficient to confirm the unit could continuously comply with the proposed limit. The remaining source has a maximum recorded opacity of 3% (6-minute average) which is quite close to the proposed standard particularly given the 5% increments opacity readings are recorded in and the accepted 7.5% accuracy of Method 9. Commenters stated that no emission units have sufficient data below the proposed standard to confirm this limit is achievable at all times.

[1597] Commenters stated that the II&S industry already effectively controls PM emissions from slag handling, storage, and processing using water sprays and other means in compliance with existing opacity limits in their Title V Renewable Operating Permits ("ROP"). The median ROP opacity limit for these operations is 20 percent for slag dumping, pit digging, stockpiling, and truck loading.

[1597; 1631] Commenters stated that the 5 percent opacity limit for BF and BOPF slag handling, storage, and processing at existing facilities is not justified by the science and potential benefit, especially considering the extreme cost to the II&S industry.

Response 1:

Based on the comments submitted, the EPA is finalizing an opacity limit of 10 percent based on a MACT floor analysis for existing sources. The 300+ readings of opacity data collected from the 2022 section 114 collection requests indicate that The 300+ readings of opacity data collected from the 2022 section 114 collection requests indicate that most opacity readings (based on 6-

minute averages) done at slag processing in 2022 were below 10 percent. Therefore, we conclude that opacity can be maintained below 10 percent safely.

Comment 2:
[1597] Commenters stated that the EPA estimates that HAP emissions from slag handling, processing, and storage operations, after accounting for existing work practices, are 30 tpy. The Agency's analysis then estimates that the proposed work practice standards would reduce these emissions by 25%, or 7.4 tpy. However, these estimates are not based on any testing or other actual data. The EPA also has not explained how and to what extent the proposed opacity limits are achievable or will result in the estimated emission reductions. Commenters stated that as detailed in AISI's analysis, which is rooted in knowledge of and experience with slag operations, a reasonable estimate of current HAP emissions from slag operations is 0.45 tpy, with potential total HAP emission reductions of a mere 0.10 tpy.

[1597] Commenters stated that the EPA must collect and utilize accurate emissions data, to calculate reasonable emission estimates, quantify potential emission reductions, project possible health benefits, and to justify the costs imposed on industry to comply with new requirements.

Response 2:

The EPA has identified slag handling, storage, and processing operations as a previously unregulated source of HAP emissions. Therefore, pursuant to the *LEAN* decision and CAA section 112(d)(2)/(d)(3), the EPA is establishing emissions standards for this previously unregulated source. In this action, the EPA is promulgating an opacity limit of 10 percent, which we conclude represents the MACT floor level of performance, which is the minimum stringency allowed by the CAA section 112(d).

Comment 3:

[1631] Commenters stated that as discussed in the Industry UFIP memo, there are basic operational and safety concerns when mixing water with hot slag. Furthermore, water spray and fogging systems, even though trying to control opacity, would naturally be designed to increase moisture flow to reduce emissions, but would also reduce opacity. In practice, however, there are limits to the amount moisture that can be applied in this situation given operational and safety concerns. Generally, these systems, which utilize atomized water mists using a powerful fan, are utilized to minimize visible emissions from slag handling, processing, and storage activities outside of buildings. However, dry foggers and other similar systems may not be feasible in all instances due to location constraints, safety issues with lack of operator visibility due to steam and mist generated in sightlines of two mobile equipment vehicles (e.g., front-end loader and receiving vehicle to transport slag), and winter freezing conditions, etc. In any event, based on industry experience, a dry fog system will not prevent opacity above 5 to 9%, and certainly not under all conditions, at all times.

[1631] Commenters stated that the only option believed to be potentially capable of continuously meeting a 5% opacity limit would be enclosing and controlling emissions from slag pits (which still has tremendous technical feasibility issues to be viable). Commenters conducted an analysis that looks at enclosing slag pit areas as the required control to comply with the proposed 5% limitation and provided this analysis in their comment.

[1631] Commenters stated that any enclosure of the pits would need to allow for the thermal buoyancy of heated air/steam and release at the roof via vents. The release volume would result in increased dust concentration at the point of release compared to the concentration near the surface of the open pit.

[1631] Commenters stated that alternatively, the slag may be processed by granulation by rapid cooling with water to produce a byproduct which is used in cement as an additive or air cooled in open pits to generate aggregates. This is an expensive process, however, with a limited market and should not be considered a work practice standard to reduce emissions. In addition, due to market demand or for maintenance purposes, slag granulators experience downtime, so conventional slag operations continue on a limited basis.

[1631] Commenters stated that if an enclosure were to be used as a work practice to minimize emissions and reduce opacity, the required enclosed volume would be between 500,000 and 1,500,000 feet 3 with an area between 7,000 and 30,000 square feet. Issues with such enclosure would include:

- Safety of personnel within the enclosure during excavation and digging
- Release of thermal energy into the enclosed volume
- Corrosion of building structure and walls74
- Cost of erecting the enclosure
- Requirement to have open doors (entry) for excavation and transport equipment which would limit dust containment

[1631] Commenters stated that while they included costs to enclose slag pits in their analysis, they did not fully accounted for technical feasibility and safety aspects that inhibit the use of an enclosure in some or all locations. Based on the number of slag operations currently in existence at II&S facilities, commenters estimated that the total capital costs would be $177 million and that overall annual operating costs would be $18 million.

Response 3:

Based on the comments submitted, the EPA is finalizing an opacity limit of 10 percent based on a MACT floor analysis for existing sources.

EPA acknowledges that mixing water and slag in certain locations at certain times can pose safety concerns. But more commonly, there is no safety risk in wetting slag. In fact, slag is intentionally wetted at BF and BOF slag pits, which are outdoors thus also wetted by the rain, for cooling and material quality purposes. Using water fogging is an effective method for reducing slag emissions.

The most emissive parts of slag handling, those expected to be above the standard, occur at only a few locations, including the slag spout, where the slag dumps into the pit, and BF pit digging. There are ways to control emissions from those few locations that are far short of a full enclosure. Fogging, and local hooding and control have been used and are effective.

3.3.2 Using the MACT floor opacity limit

Comment 1:

[1627] Commenters stated that to meet obligations under section 112(d)(2), the EPA must determine the “maximum” degree of reduction that is “achievable” and set limits that require it. (42 USC 7412(d)(2).) The EPA does not appear to have tried to determine what the maximum achievable degree of reduction is, and its proposal does not say anything other than that the agency is seeking comment on a 5 percent opacity limit [for slag processing]. Commenters stated that, accordingly, the EPA’s proposal does not satisfy section 112(d)(2).

[1627] Commenters stated that the EPA’s discussion indicates that a 5% opacity limit is achievable and that 9% opacity does not reflect the maximum achievable reductions. The Agency states:

Based on the 2022 data, the two best-performing facilities in our dataset had maximum opacity readings of 2.5 percent and 5 percent, respectively. The average opacity readings at these two facilities are 0.2 percent and 1.2 percent, respectively. (88 Fed. Reg. at 49,411.)

Response 1:
As discussed in other responses in this RTC document, after reviewing and considering public comments from various stakeholders, EPA is finalizing an opacity limit of 10 percent for slag processing, handling, and storage based on a MACT floor analysis for existing sources for reasons discussed in the final rule preamble.

Comment 2:

[1627] Commenters stated that the EPA seems to have determined that at least a 5 percent opacity limit is achievable, and the version of the regulations that the EPA sent to OMB shows a 5 percent limit. However, the limit the EPA actually proposes is 9 percent. To the extent it is the EPA’s decision to propose a 9 percent limit instead of 5 percent, the Agency should explain that decision in the record and support it with substantial evidence. Commenters stated that the EPA’s failure to do so is arbitrary and capricious. To the extent the change was made by OMB, OMB’s changes must be reflected in the record and a failure to show them violates the CAA section 307(d)(4). More fundamentally, OMB should not override the EPA’s judgment by weakening standards. Commenters stated that Congress delegated to the EPA, not OMB, the authority and obligation to implement that CAA, and it is the EPA’s job to exercise the discretion it was given to regulate steel mills and to provide a rational basis for its rulemaking decisions.

Response 2:
EPA proposed an opacity limit of 5 percent for slag processing, handling, and storage which was a BTF limit. After reviewing and considering public comments from various stakeholders, EPA is finalizing an opacity limit of 10 percent based on a MACT floor analysis for existing sources for reasons discussed in the final rule preamble.

Comment 3:

[1594] Commenters agreed that the proposed opacity limit will result in HAP reductions and encouraged the EPA to not weaken any of the proposed limits.

Response 3:

The EPA acknowledges the commenters support for opacity limits.

Comment 4:

[1562; 1575] Commenters supported the BTF opacity limit of 5 percent for the 6-minute averaging time. Commenters believed a lower opacity limit between the top two performing sources is between 0 and 6.25% so an opacity limit in that range is appropriate.

Response 4:

EPA acknowledges receipt of this comment.

Comment 5:

[1627] Commenters stated that the lower emission level of 1.2% opacity is also achievable. That is the highest "average" level achieved by either of the two best sources, and the EPA's proposed limit allows for averaging. Commenters stated that the EPA does not provide any reason to believe this level – which is already being achieved by two sources – is not "achievable."

Response 5:

EPA acknowledges receipt of this comment.

3.3.3 Opacity data for slag processing, handling, and storage

Comment 1:

[1597; 1590] Commenters stated that the EPA's supporting analysis explicitly acknowledges that there "were no accurate emission factors available for all three steps in slag processing," and, accordingly, "emission factors developed for other II&S sources were used as surrogates to estimate fugitive emissions" from slag operations (2019 Emission Factor Memo). The EPA includes emissions from slag operations under the broad emission category of sources that are UFIP. Such emissions are classified as "unmeasurable" because they are fugitive in nature and typically not routine. Moreover, there is no accepted EPA standard test method to measure these emissions.

[1597] Commenters stated that as part of this rule making, EPA created a particulate matter PM emission factor of 0.29 lbs of PM per ton of slag processed. The calculation of this emission factor was based almost exclusively on a paper presented by Trozzo, D.L. and C.F. Hoffman, U.S. Steel, at a symposium on Iron & Steel Pollution Abatement Technology held October 18-20, 1983. The Trozzo paper presented a methodology to quantify emissions from iron and slag runners within a casthouse. The test methodology endeavored to capture emission from two 13-inch sections of runner, one section for iron and one section for slag. These two 13-inch sections of runner were presumed to be representative of the entire 184 feet of runners located on the east side of the furnace. Numerous variables were not considered in this limited study, like distance

from the furnace, length of time exposed to air, type of steel being produced, temperature at the point of sampling, reaction with air, and so on. It is a significant oversimplification and in error to assume that the emission factors generated in the Trozzo paper could be applied to any iron and steel slag runner within a casthouse, or applied to slag dumping into a pit or slag sitting idle within a pit, as has been done in this proposed rule.

[1597] Commenters stated that the Trozzo paper concludes that their "study has successfully demonstrated a technique for the measurement of slag- and iron-runner emission rates." Again, the study purported to have successfully demonstrated a technique, not establish an emission factor for the entire II&S industry.

[1597] Commenters stated that at the end of the Trozzo paper there are the following two statements: "The work described in this paper was not funded by the U.S. Environmental Protection Agency and therefore the contents do not necessarily reflect the views of the Agency and no official endorsement should be inferred." "The material in this paper is intended for general information only. Any use of this material in relation to any specific application should be based on independent examination and verification … " Commenters didn't believe there have been any independent examination or verification of the methodology or the use of the methodology to establish emission factors for iron and steel runners.

[1597] Commenters stated that in this rule making, the EPA stated that good engineering judgement was used to establish emission factors for BF and BOPF slag handling, storage, and processing, but the use of the Trozzo paper to establish emission factors is not good engineering judgement.

[1590] Commenters stated that before proceeding with the proposed imposition of stringent VE limits on slag operations, the EPA must collect and utilize accurate emissions data, as well as information on compliance costs, rather than relying on the use of "surrogates" to characterize unique, intermittent, and "unmeasurable" emission sources. The EPA also should acknowledge the fact that these intermittent emissions – which vary considerably in nature and extent among the many different configurations of steel industry slag processing operations – currently are addressed on a case-by-case basis through existing industry practices. Commenters stated that the proposed controls on slag operations cannot be finalized on basis of the conjectural and legally deficient basis in the current rulemaking record.

[1590] Commenters stated they represent a distinct segment of the U.S. steel manufacturing industry that is not directly covered by the II&S NESHAP, however, several issues raised in the rulemaking are potentially relevant to EAF (electric arc furnace) steel operations, particularly those related to slag handling operations. Commenters stated that the EPA estimated HAP emissions from slag handling, processing, and storage operations, after accounting for existing work practices, are 30 tpy. The Agency's analysis then estimates that the proposed work practice standards would reduce these emissions by 25 percent, or 7.4 tpy. However, these estimates are not based on any testing or other actual data. The EPA also has not explained how and to what extent the proposed opacity limits are achievable or will result in the estimated emission reductions. Moreover, as detailed in AISI/USS's analysis, which is rooted in knowledge of and

experience with slag operations, a reasonable estimate of current HAP emissions from slag operations is 0.45 tpy, with potential total HAP emission reductions of a mere 0.10 tpy.

[1590] Commenters stated that the EPA exaggerates the actual HAP emissions associated with slag operations and claims credit in the proposal for reductions that are almost 100 times higher than more realistic estimates.

Response 1:

There are a variety of factors causing the lack of high accuracy emission factors in the iron and steel industry, but EPA has identified sources of credible emission factors and has determined it is appropriate to use them. EPA found no fundamental flaws with the Trozzo work and has determined it is appropriate to use.

Comment 2:

[1597] Commenters stated that in this rulemaking, the EPA relied upon data collected from a 114 data request for EPA Method 9 visible emission observations of opacity from blast furnace and basic oxygen furnace slag handling, storage, and processing at II&S facilities to establish a MACT floor of 9 percent. The data set the EPA used to establish this MACT floor is incomplete and insufficient to establish a MACT floor. This data set is predominantly representative of the few slag handling activities that require routine EPA Method 9 opacity readings under a facility's Title V Renewable Operating Permit. This data set does not adequately represent intermittent slag handling activities that may have higher, but brief, opacities for VE. Due to the intermittent and short nature of these activities, and their lack of potential impact on the surrounding environment, regulatory agencies have deemed that conducting EPA Method 9 opacity observations are unnecessary. If all BF and BOPF slag handling, storage, and processing activities at II&S facilities are to be regulated by a single MACT standard for opacity, then all slag handling and processing activities must be included in the data set used to establish the MACT standard.

[1597] Commenters stated that the EPA has not used good engineering judgement by attempting to create a single average opacity for dissimilar slag handling and processing activities. It is irrational to set a single standard for slag handling activities that have nothing in common, other than the fact that slag is involved. For example, there is no rational reason to believe that the VE from pouring liquid slag into a pit would be in anyway comparable to digging hot solidified slag from a pit. Digging the pit would have a significantly greater potential for PM emissions. Similarly, it is not rational to believe that the emissions from a conveyor would be comparable to emissions from a crusher in an aggregate processing plant, like what is used to process slag. That is why AP-42 has established activity specific emission factors for conveying and crushing aggregates. For reference, the AP-42 emission factor for PM from fines crushing is almost 280 times greater than the AP-42 emission factor for PM from a conveyor transfer point.

[1597] Commenters stated that if attempting to establish a single MACT standard for opacity from slag handling, storage, and processing for the II&S industry, which is unrealistic, it is incorrect to average all data points from dissimilar activities, especially when there are more observation or data points for one activity as compared to others. For example, if the data set has 20 observations of dumping liquid slag into a pit, and only three observations of pit digging, the

resulting calculated MACT standard would be biased low, due to a weighted data set biased towards pouring slag. As another example, if an aggregate processing plant has 15 conveyors, 3 screens, and 2 two crushers, it is not appropriate or good engineering judgement to take a single opacity observations from each piece of equipment to establish a MACT standard for opacity that is then applicable to each individual piece of equipment. This would create a MACT standard that is heavily biased to the opacity of visible emissions from the conveyors, which would be biased low and unachievable for the crushers.

[1597] Commenters stated that creating a single MACT floor for opacity of visible emissions from slag handling, storage, and processing for II&S manufacturing is inappropriate and not supported by good engineering practices.

Response 2:

EPA disagrees that a single opacity limit is inappropriate. EPA knows that the BOPF shop roof monitor, for example, has a single opacity limit despite the opacity originating from such wide activities as hot metal charging, oxygen blowing, tapping and others. EPA knows that most state implementation plans have broadly applicable opacity limits that apply across very different industries.
EPA acknowledges that some slag handling operations may have higher opacity and shorter duration emissions while others have lower opacities over longer periods. Those differences in emission types have always existed, but that fact does not mean a single limit is inappropriate.

3.4 BF bell leaks standards

Comment 1:

[1631] Commenters stated that the EPA characterized the proposal for BF bell leaks as being made "pursuant to CAA section 112(d)(2) and (3)" and does not otherwise cite the work practice provisions of CAA section 112(h), even though the EPA explicitly describes the proposed "10 percent opacity" provisions as being "an action level . . . and not a MACT emissions limit." At the same time, the requirements that the EPA is proposing for BF bell leaks are in the nature of work practice standards, and in fact the EPA describes them as such in supporting documentation found in the docket for this rulemaking action (2023 UFIP Memo).

[1627] Commenters stated that if the EPA is setting limits "pursuant to section 112(d)(2) and (3)" as it claims – and as it must – they must be numeric emission limits and not just an "action level." Nowhere does the EPA identify any statutory authority for setting an action level for large bells rather than a numeric limit, and this aspect of its proposal is flatly unlawful. For small bells, EPA's proposed requirements are even weaker, vaguer, and further from being an emission limit required by section 112(d)(2)-(3). Nowhere does EPA claim that this is the emission level achieved by the relevant best performing sources, those with the lowest emission levels, nor is there any record support for any such notion.

[1627] Commenters stated that if the EPA wishes to promulgate work practice requirements under section 112(h) in lieu of emission limits under section 112(d)(2)-(3), the Agency must demonstrate that setting numeric emission limits under section 112(d)(2)-(3) is not feasible under

section 112(h). Commenters stated that because the EPA's proposed action level is not an emission limit and the EPA has not shown it is infeasible to prescribe or enforce an emission limit, the proposal is arbitrary and capricious as well as unlawful.

[1627] Commenters stated that assuming arguendo that the EPA's requirements for bell leaks do not need to be completely replaced by lawful numeric emission limits under section 112(d)(2)-(3), they must be strengthened.

Response 1:

Section 112(d)(2) of the CAA allows the EPA to establish MACT numerical standards and directs the EPA to consider the application of measures, processes, methods, systems, or techniques, including, but not limited to, those that reduce the volume of or eliminate HAP emissions through process changes, substitution of materials, or other modifications; enclose systems or processes to eliminate emissions; collect, capture, or treat HAP when released from a process, stack, storage, or fugitive emissions point; are design, equipment, work practice, or operational standards; *or any combination of the above*. The MACT standards may take the form of design, equipment, work practice, or operational standards where the EPA determines that either (1) a pollutant cannot be emitted through a conveyance designed and constructed to emit or capture the pollutant, or that any requirement for, or use of, such a conveyance would be inconsistent with law; or (2) the application of measurement methodology to a particular class of sources is not practicable due to technological and economic limitations. CAA section 112(h)(1)–(2). Such is the case here; the very nature of fugitive emissions makes a work practice appropriate, and there is no bar to including a numerical component as an action level for the standard. *See* CAA section 112(h)(2).

Comment 2:

[1562] Commenters supported a MACT limit that requires the proposed work practices and remediation, but does not support an action level for bell leak monitoring and repair. Commenters believed an enforceable MACT limit is important for accountability for these sources.

Response 2:

EPA acknowledges receipt of this comment.

Comment 3:

[1631] Commenters stated that the proposal includes a requirement that the metal seating be properly maintained, which is vague and likely unenforceable. The EPA could instead require an O&M plan that focuses on maximizing the life of a metal-on-metal seal through the use of appropriate construction materials, proper machining, and appropriate pre-installation testing of each bell to confirm it meets the established specifications that ensure the best seal possible for the particular furnace and the condition at which it operates.

Response 3:

The EPA disagrees with the commenter that the proposed measures are insufficient or unenforceable. The required measurement of opacity provides a direct indication of ongoing performance of the seal, indicating the proper maintenance of the seal. EPA understands that the emissions of HAP can be significant and anticipates that the repair and replacement schedules proposed here are more appropriate than specifying design qualities that, because of many other factors, may or may not minimize emissions.

3.4.1 Proposed opacity action level for bell leaks

Comment 1:

[1631] Commenters stated that the proposal would impose a 10 percent opacity action level (3-minute average) for repair or replacement of bells, but the EPA lacks statistical data to support this opacity action level because the 2022 ICR included only Method 22 VE Observations (which measures duration of opacity being present), not Method 9 (which measures opacity percent). Therefore, there is no statistical analysis available to provide a reasonable basis to set an enforceable action level.

[1631] Commenters stated that any repair or replacement trigger based on the mere presence of any visible plume is problematic because it is based on a false premise that a properly operating bell has no visible VE; even newly installed bells may have VE due to equalization needs. For these reasons, the EPA should not finalize the proposed action level. Further, a 10 percent opacity action level is an unreasonably conservative trigger when many state SIP opacity limits are 20 percent. Industry properly manages bell leaks to remain compliant with state opacity limits, and the EPA has not alleged otherwise. A 10 percent action level would also be unnecessarily burdensome considering the substantial cost and time associated with bell replacements and the association nominal, if any, reduction in HAPs.

Response 1:

The EPA used its best judgment to set the 10% opacity action level. However, after considering comments and state SIPs, the EPA is moving forward with a 20% opacity as an action level and not a standard supported by top-down MACT analysis.

The EPA understands that bells are designed and installed to be essentially leak free, and even if there are miniscule levels of emission from new or repaired bell seals, they would not be visible to the eye. Therefore, any emissions that are so great as to become visible are a concern. Through the opacity and replacement/repair regimen, the EPA is ensuring that leaks of HAP from equipment that are designed to be essentially leak-free are addressed quickly.

Comment 2:

[1631] Commenters stated that the proposal would require repair or replacement of a large bell if an action level is triggered, but the EPA fails to recognize that each furnace is unique based on its age, size, design, air flow, raw material usage, and production specification. A one-size-fits-all approach is therefore inappropriate. Commenters stated that the EPA should consider other, less expensive and less burdensome steps that can be taken. Industry should be allowed sufficient time for troubleshooting and resolving any opacity-related issues without immediately triggering the need to begin a repair or replacement project. As another example, rather than requiring

regular Method 22 tests even when a brand new bell is installed, perhaps the testing could commence at a set point such as 2 years after a replacement.

[1631] Commenters stated that this approach is consistent with responsible facility management, and it also will work to reduce emissions while minimizing disruption of operations. This approach is one that the EPA has adopted in other rules, such as the refrigerant management rules under CAA section 608, which provide for testing and repair opportunities prior to resorting to replacement of expensive refrigeration equipment. Moreover, when replacement is needed, the refrigerant rules direct preparation of a plan for replacement that affords sufficient time to achieve the replacement because, like here, replacement equipment can be large and require significant design and order lead time. The EPA has not explained here why the typical approach is inappropriate for this largescale equipment, especially given that the equipment here typically represents a much more significant capital investment than the equipment subject to section 608.

[1631] Commenters stated that this alternative stepwise approach is more sensible than the proposed approach requiring an almost immediate repair/replace decision, which will lead to a higher replacement rate when replacement may not be the correct or a necessary action. In many instances there is no difference between repair and replacement because a bell cannot be repaired while in service and must be refurbished at a specialized offsite facility. Any time a repair or refurbishment is needed, the furnace must be shut down. It is inappropriate for the EPA to prescribe a draconian outcome, as it needlessly increases costs and requires resource expenditure that could be avoided by allowing facilities to continue operating according to their best management practices. Facilities already replace bell seals when necessary. The proposed work practice would preclude facilities from undertaking other, less-demanding initial actions first, rather than immediately sending bells off to be refurbished or replaced.

[1631] Commenters also requested that the rules be revised to provide that if two consecutive Method 9 tests indicate that the corrective actions have been effective, then no bell repair or replacement is needed, and no deviation should be presumed to have occurred. If the Method 9 tests indicate consistently less than the final limit or action level, then the facility can revert to monthly Method 22 tests.

Response 2:

The EPA agrees with the commenter that an immediate replacement may not be the appropriate measure, and that troubleshooting could potentially reduce emissions more quickly. The final rule will allow for two 5 day time periods to address the opacity. If those relatively quick repairs address the opacity, the replacement of the seal is not required by this observed opacity event.

3.4.2 Proposed 4-month time period to repair or replace seals

Comment 1:

[1631] Commenters stated that because industry can replace bells only during an outage requiring furnace shutdown, to the extent that the proposal would require more frequent replacements, there would be more frequent startups and shutdowns. During startups, emissions

are higher than during steady-state operations. The EPA does not appear to have taken into account that overall emissions could actually be increased if the replacements are required more frequently and not during a regularly scheduled outage. The EPA should therefore either withdraw the proposal or, at a minimum, allow repairs and replacements to occur during regularly scheduled outages.

Response 1:

The commenter has not provided sufficient information to determine if a potential long term slow leak such as that identified by opacity observations or a shutdown to replace the seal would cause more emissions. However, as a result of other comments, the final rule will allow for two 5 day time periods to address the opacity. If those relatively quick repairs address the opacity, the replacement of the seal is not required by this observed opacity event.

Comment 2:

[1631] Commenters stated that large bells take much longer than four months to procure and install. Every bell top campaign is unique, and both small and large bell replacements and repairs (depending on the repair required) are large capital projects that require indefinite lead times for equipment design, project planning (i.e., engineering, safety protocols, and logistical coordination) and corporate approval and funding authorizations for capital expenditures (e.g., approximately $12 to $14 million for a large bell outage) (Industry's control cost estimates). Even if industry were to keep a replacement bell onsite and available if needed, frequent replacements of multi-million dollar pieces of equipment requiring a long downtime, resulting in lost revenues, in an effort to minimize very small quantities of HAPs is unreasonable. Commenters requested that the four-month requirement not be finalized by the EPA.

Response 2:

The EPA understands that bells are designed and installed to be essentially leak free, and even if there are miniscule levels of emission from new or repaired bell seals, they would not be visible to the eye. Therefore, any emissions that are so great as to become visible are a concern. Through the opacity and replacement/repair regimen, the EPA is ensuring that leaks of HAP from equipment that are designed to be essentially leak-free are addressed quickly.

Comment 3:

[1631] Commenters stated that as currently drafted, the four-month allotment to accomplish repair or replacement does not take into account that an initial repair attempt itself may take time. If that repair turns out to be unsuccessful, the time to accomplish replacement will already have been diminished through the repair attempts.

[1631] Commenters stated that the rule needs to therefore provide separate time frames for repair and then for replacement if the repair is unsuccessful. And additional time (greater than 4 months) needs to be provided if a replacement actually is necessary, especially for large bells. If repeated Method 9 testing demonstrates that a repair or replacement is necessary, the facility would prepare, within a certain amount of time, a corrective action plan to repair or replace the bell reflecting the amount of time needed to complete the repair or replacement.

Response 3:

EPA acknowledges that repair or replacement of the large bell takes time and that different corrective actions require different periods of time. EPA is adding the allowance for a blast furnace operator to correct deficiencies prior to starting the 4 month period. However, EPA expects that owners and operators begin preparation of large bell leak improvements prior to exceeding the opacity threshold. Having parts and work plans prepared should significantly reduce the response time to address high opacity. EPA anticipates the approximate 4 month response requirement, including a short allowance to attempt a quick correction, is appropriate for both repair and placement.

Comment 4:

[1627] Commenters stated that the EPA developed an estimate of the rate of decay of bell seals based on “the maximum of the range of data for Blast Furnace slips, at 0.046 lb/ton (EPA, 1976; EPA, 1979) from AP-42 (EPA, 1995), distributed exponentially over 5 yrs of typical bell seal lifetime and using average value at 3 yrs (1 to 5 yr. range).”

[1627] Commenters stated that the EPA’s data show that, once a bell leak starts, the rate of degradation in performance increases exponentially. There is no reason that the EPA should allow mills to emit huge quantities of toxic pollution into neighboring communities – and it bears repetition that the EPA has found that mills’ bell leaks alone cause 85 tons of toxic metals to be emitted each year – just because mill owners do not maintain their bells adequately. Commenters stated that virtually all the pollution from bells could be prevented if owners monitored their bell seals better and replaced them sooner, before the deterioration occurs.

[1627] Commenters stated that the Iron and Steel Institute has asserted that “bell leaks only occur intermittently from certain furnace tops that are old and these tops are replaced quite frequently.” (EPA-HQ-OAR-2002-0083-1020_content.) The first “non-zero” opacity reading is five percent and it does not cost any more to take a Method 9 VE reading than a Method 22 VE and so there is no reason for the two-step approach proposed, and no reason to wait until the leak has progressed to a 10 percent opacity level to commence planning for correction. Commenters stated that the EPA should take the Iron and Steel Association’s representations that “only old furnace bells” leak and “they are replaced quite frequently” and require that the facility begin to make plans to replace/resurface the seals on large bells promptly as soon as any leak has been detected. The EPA should strengthen its requirements to include:

1. Monthly DOC II VE inspection during charging.
2. A work practice requirement for detailed inspection and determination of leak rate 3 years after last reseal and every 3 months thereafter.
3. Require the resealing of bells within 3 months of first non-zero DOC II VE result

Response 4:

EPA agrees that bell leaks can be a source of HAP and that it is important to monitor and reduce emissions from them. There is a significant difference in maintenance and replacement costs between the small and large bells. For the small bells, EPA is requiring the seals be repaired or replaced on a schedule that has been shown to produce no visible emissions. Maintenance and replacement of the large bell is substantially more difficult and costly, so using the small bell

paradigm is inappropriate, and an allowance for some level of emissions for a short period of time is appropriate. Both the large and small bell have ongoing visible emissions monitoring to ensure that when a leak does occur, it is promptly addressed. The EPA disagrees with the commenters assertion that there is no difference in cost between an EPA Method 9 and an EPA Method 22 observation. The training required for EPA Method 22 is minimal, and numerous operators may be trained to perform EPA Method 22 observations at extremely little cost. EPA Method 9 observers however have, in addition to an initial multi-day training, a semiannual recertification requirement. The EPA is making no changes to the regulations as a result of this comment.

3.5 Beaching of iron from BFs standards

Comment 1:

[1631] Commenters stated that the EPA has proposed a work practice standard that would require enclosing the process on three sides or, alternatively, installing a costly CO_2 suppression system. As a threshold matter, commenters respected the EPA's new position on the beneficial effects of enclosures on fugitive PM emissions. The EPA stated in the 2020 RTC that, while building structures may provide an "immediate barrier to fugitive emissions," "due to constantly flowing drafts" and the opening of doors and other exits, "the vast majority of the uncontrolled PM is expected to eventually be re-emitted from the building as fugitive emissions" and therefore "no additional control is attributed to the buildings." The EPA appears to be changing from its 2017 position that enclosures actually do help prevent fugitive emissions. EPA's UFIP Memorandum from April 3, 2023 specifically states as follows: Enclosures that prevent beached iron fumes from being mixed with the atmosphere are used at many current II&S facilities (AISI, 2017). These enclosures need only three sides to be effective. Due to the heat of the beached iron, having one side open to air allows for a better worker environment.

[1631] Commenters stated that constructing enclosures for beaching operations requires special techniques and the use of certain materials because they must be able to withstand intense heat during the beaching event. The installation of enclosures would be infeasible at facilities with space limitations, and, while the EPA is not requiring enclosures at all facilities, the alternative is cost-prohibitive. The eight II&S facilities subject to Subpart FFFFF have been established and in operation for decades, and, while some of the facilities have enclosures in place for their beaching operations, four others have very limited space, making the retrofit construction of an enclosure virtually impossible as explained in more detail in Appendix A to their comment. Relocating beaching activities to a new area with more space is not practical and also cost-prohibitive. Any new area with available space within a facility would be located a further distance from the BF. Because molten iron is transported in railcar, any relocation of beaching activities would require capital expenditure for additional tracks.

[1631] Commenters stated that because three-sided enclosures are not feasible at these four facilities, they would be forced to install CO_2 suppression systems. These systems are unreasonably expensive, as explained in more detail in Appendix A to their comment. The EPA should not require installation of these unreasonably expensive CO_2 suppression systems, especially when beaching activities are already minimized to the extent possible, the emissions are very low at 40 pounds per year industrywide, and any reductions would not be meaningful.

Response 1:

The EPA proposed and is finalizing work practice standards that include the installation of a CO_2 suppression system and/or full or partial (hoods) enclosures around beached iron. These work practices are already in place at some facilities. The EPA has determined, based on the information collected during the ICR, that even partial (hoods) enclosures will result in emission reductions from beaching.

Comment 2:

[1631] Commenters stated that for all beaching operations, the proposal requires the facilities to minimize the height, slope, and speed of beaching. In the 2023 UFIP Memo, the EPA recognized that this particular work practice is already currently in use by the facilities with beaching operations. Indeed, each facility that conducts beaching activities already has site-specific standard operating procedures for beaching intended to minimize potential VE. Commenters were concerned, however, because the term “minimize” in this work practice standard is vague, subjective, and vulnerable to varied interpretations. Because site-specific procedures for minimizing emissions are well established, the EPA should only require that facilities maintain and follow those procedures at all times.

Response 2:

The EPA agrees with commenters that “minimize” is vague and revised the language to be more specific in 40 CFR 63.7793(e)(1). The work practice standard requires that a facility minimize the distance the molten metal falls to the ground, the slope or grade of the area where beaching takes place and where the hot metal will run down away from the pouring area, and that the rate at which molten metal is placed on the ground to minimize emissions to the greatest extent possible.

Comment 3:

[1631] Commenters stated that the proposal would require annual Method 9 testing for opacity, yet the EPA has proposed no opacity limit, so this may be an inadvertent inconsistency that industry requests be eliminated. Beaching activities are not planned events, making it impossible to arrange in advance for a Method 9 test to be conducted. Beaching operations are also sporadic and very infrequent. Commenters stated that the EPA provided no justification or rationale for requiring annual testing, and this requirement is unreasonable in any event with no applicable opacity limit and the extremely low 40 pound-per-year level of emissions industry-wide. Compliance with the proposed work standards can independently be verified without relying on annual opacity readings, especially considering that beaching events are unplanned.

Response 3:

The EPA agrees with commenters that beaching is an intermittent, unplanned activity that does not occur on a regular, or even annual basis. The EPA is amending the rule at 40 CFR 63.7830 to remove paragraph (f) that contained the annual beaching opacity requirement.

Comment 4:

[1631] Commenters stated that rather than the EPA's proposed list of work practice standards which are too expensive and are not proven to reduce HAP emissions, commenters recommended the following:

- Preparing the beaching area prior to the beaching of iron in a manner designed to minimize fugitive emissions from the process;
- Controlling the pour rate from the torpedo car to minimize fugitive emissions; and
- Managing visible emissions when they occur through observation of emissions from the process, if any, and responding to such emissions, e.g., by taking steps to adjust the iron pour rate, pause or stop the pour, or move to a different pour location as appropriate.

Response 4:

The EPA proposed and is finalizing work practice standards that require, among other things, an affected source to minimize the slope or grade of the area where beaching occurs and to minimize the rate at which molten metal is placed on the ground.

3.6 BOPF shop / BF casthouse reconsideration

Comment 1:

[1631] Commenters stated that detailed analyses rectifying the EPA's errors, applying emission factors that commenters believed are more representative, and the additional controls that they have identified would be needed to meet the 5 percent opacity standards (beyond the EPA's work practice approach) leave a dramatic gap between what the EPA has portrayed in the rulemaking and what commenters truly believed the rule will require, which they discussed in an appendix to their comment.

Response 1:

After considering comments, the EPA now recognizes some operations may need to make more significant changes than we anticipated at proposal to meet the 5 percent opacity standard at all times for the BF casthouse and the BOPF shop. After revisiting the 2022 opacity data provided to the EPA as part of the CAA section 114 information requests, EPA has concluded that we do not have sufficient time to fully analyze the data submitted in order to set a revised opacity standard for the BF casthouses and the BOPF shops. This is described in more detail in Section III.B.2. in the preamble for this final rule.

Comment 2:

[1631] Commenters stated that the EPA includes the option to use EPA Method Alt-082 (camera) (referencing ASTM D7520-16) to measure opacity from fugitive emissions associated with BF casthouses and BOPF shops, as an alternative to Method 9. Method 9 is reliable, provides immediate results, and has been used in the steel industry for decades. Method Alt-082, on the other hand, should not be included in this rulemaking, even as an option. The EPA's statements in the 2019 AMOS Memo that the cameras required in Method Alt-082 are more reliable, less biased, and an improvement over Method 9 are incorrect and unsupported in the record. Even if the EPA believes the cameras are generally reliable, they are not established as reliable for roof monitors and should not be adopted for this industry at this time.

[1631] Commenters previously expressed concerns with Method Alt-082 during development of a Ferroalloys Production rule. Comments there highlighted significant concerns with Method Alt-082 and included an important technical paper that is omitted from the EPA's docket here, but which did actually examine the use of digital cameras for measurement of fugitive emission opacity that documented statistically significant field results that were inconsistent and greater than those reported by Method 9. These findings were consistent with similar conclusions by the previous ASTM workgroup chair, in work performed regarding digital cameras having observed elevated opacity readings compared to Method 9 readings.

[1631] Commenters stated Method Alt-082 has not been used successfully to accurately quantify and timely address fugitive opacity emissions. The EPA states in this docket that the only mandatory use of Method Alt-082 was imposed in the Ferroalloys Production source category. Not apparent from the record for this proposal, however, is that the ferroalloys industry is not actually using Method Alt-082, but instead is using Method 9 exclusively. As of August of 2023, the ferroalloys industry is still relying on Method 9 observations and not Alt-082. Following a decision on a Petition for Reconsideration, a Second Petition for Reconsideration was submitted to EPA by Eramet Marietta Inc. ("Eramet") regarding the Ferroalloys Production standards in light of new evidence, which is still pending. Although the EPA has not issued a formal determination on this second reconsideration petition, on June 8, 2017, the EPA nonetheless approved use of Method 9 as an Alternative Method to Method Alt-082 for the Ferroalloys Production standard. As described in the request to use Method 9, Eramet explained that Method Alt-082 was not reliable or accurate for measuring fugitive emissions from the Ferroalloy Production source category. In that decision, the EPA stated that "[t]he sole vendor no longer offers [an ASTM compliant system off the shelf]; "[t]he DCOT software provided by the sole vendor is not yet fully developed for use"; and "[t]he costs of implementing [the method] are unpredictable." (Letter from Steffan M. Johnson.) None of those factors have changed, and they are equally applicable and relevant to the II&S source category. The current proposal fails to include this relevant information, and it erroneously points to the Ferroalloys Production source category as an example supporting inclusion of Method Alt-082, when in fact that source category is not using Method Alt-082. Commenters stated that unless and until Method Alt-082's accuracy and reliability are demonstrated for fugitive emissions, along with an ability to quickly respond to the results of the Method Alt-082 readings, the EPA should not mandate its use.

Response 2:

The EPA has not proposed and is not finalizing a requirement to use ASTM D4520-16. The EPA continues to allow, as an option the use of ASTM D750-16 to demonstrate compliance. At 82 FR 5405 (cited by the commenter), the EPA reaffirmed the use of ASTM-D7520-13 (the most up to date version of the method at that time) for use in the ferroalloys industry. We note that, in the June 2017 Steffan Johnson letter noted by the commenter, the EPA did not address the assertion by the commenter on the reliability or accuracy of the method, but spoke solely to the availability and expense of the camera technology in allowing the use of EPA Method 9. This is not an issue in the rule, as EPA Method 9 is already allowed for the demonstration of compliance and we are not requiring the use of ASTM D7520-16, but allowing its use as an option at the discretion of the facility. The EPA is making no changes as a result of this comment.

Comment 3:

[1627] Commenters stated that the EPA's proposal to rely on a VE requirement of opacity monitoring for BOPF shops and BF casthouses using EPA Method 9 is inadequate. The steel mills' record of compliance with current state SIP and NESHAP opacity requirements is notoriously poor. This is due in large part to the inadequacy of a VE monitoring regime. Among the many flaws with this regime are; (1) the variable and "hands on" nature of the processes, coupled with the infrequency of the proposed Method 9 observations (two per month); (2) that operators know in advance when a VE test is scheduled and are free to optimize performance at that time, even if their performance at other times is far worse; (3) that a USEPA Method 9 test cannot be conducted at night, allowing operators to violate opacity limits to violate limits at will and with impunity at night; and (5) there no objective record to confirm the observer's accuracy (the EPA's inspectors have noted that company employed VE observers have not observed opacity levels from all openings as currently required). Further, relying on a mill employee to detect and report excess emissions, which could lead to adverse consequences for their employer, creates a conflict of interest for the employee and diminishes the likelihood that violations will be reported.

[1627] Commenters stated that among the measures that the EPA identified to reduce fugitive emissions from BOPF shops is "Continuously monitor opacity from all openings with EPA Method Alt-082 (camera); re-evaluate use of monitor every two years (alternative is Method 9)." Using cameras to "continuously monitor opacity from all openings" will solve all, or almost all, the problems created by the EPA's current and proposed reliance on visual observations. By showing what the emissions are at all times, not just what mill employees observe twice a month at times when the mill operators may optimize performance, cameras will provide a far more accurate and reliable stream of data about the mills' fugitive emissions and compliance with the opacity limit, and will create a far stronger incentive for the mills to meet that limit at all times. The EPA acknowledges that "opacity can be observed with special cameras following a specific method (known as the digital camera opacity technique (DCOT), 40 CFR 63.7823), and those images interpreted by trained individuals." (88 Fed. Reg. at 49,405.) Nonetheless, the EPA did not propose to require monitoring using this established technology or provide a basis for excluding it from the proposal. Commenters stated that given the EPA's recommendation of "Continuously monitor[ing] opacity from all openings with EPA Method Alt-082 (camera)," the EPA's failure to either require this monitoring method or provide a rational basis for refusing to require it would be arbitrary and capricious.

[1627] Commenters stated that assuming arguendo that continuous camera monitoring is not feasible – although the EPA does not so claim, let alone explain, in the record – the EPA should require "randomized continuous monitoring" during active charging and casting activities. This monitoring would also be conducted using Alternative Method 082 (DOCS), taken from ASTM D7520-13. While digital pictures would still be taken frequently, only a randomly selected subset of those pictures would be submitted for analysis. The concept is similar to having a continuous security camera in a convenience store but only reviewing the film infrequently or if there is an incident. The cameras themselves cost only a few thousand dollars (DOCS II PowerPoint Presentation (ct.gov)) each and memory to store digital photos is quite inexpensive. Analyzing randomized samples of the continuous feed would be less expensive than monitoring all of them and would still provide valuable information and an improved compliance incentive for mill

operators provided the agency requires enough samples to be analyzed. Commenters emphasized, however, that randomized continuous monitoring is not as good as actual continuous monitoring, that the EPA should require actual continuous monitoring unless it is not feasible, and that the EPA did not even that actual continuous monitoring is infeasible for any reason.

[1627] Commenters stated that the steps to implement a randomized continuous monitoring requirement are as follows:

- The company develops a Method 082 monitoring plan for each opening at the BOPF and BF casthouse, noting the appropriate distance, angle, relative solar angle and common wind directions.
- After the EPA approval the company validates placement of the cameras needed to capture opacity according to Method 082 protocols. Note, given the solar angle requirement, this may necessitate two cameras if operations are conducted on a 24-hour basis. Companies can reduce the number of cameras needed by reducing the number of openings.
- The cameras are programmed to automatically take pictures for a set period of time based on parameters that indicate charging, casting or tapping activities. These pictures, and associated met data, are simply stored. No processing of the digital images occurs at this stage.
- Every 30 days site operators review a statistically significant number of photographs to assess whether Method 082 protocols for photographs have been met. The photographs to be reviewed are not determined by the company but are selected based on a "random number generator" program that selects the camera and time to be reviewed. The EPA would set an initial level of performance for meeting Method 082 camera protocols. The initial number of photographs to be reviewed would be large enough to create a statistically significant pool of photographs for the nest step (nominally 100 photographs). The number of photographs to be reviewed would adjust, up or down, depending on the demonstrated level of performance in meeting Method 082 camera protocols. This activity would be conducted by company personnel trained in Method 082 camera protocols and would not assess opacity at this time.
- The random number program would then identify a specified number of validated Method 082 photographs to be submitted to the software vendor (or other qualified independent party) for a determination of opacity readings. The EPA would initially set the number of full Method 082 determinations at numbers substantially higher than the current proposals (e.g. 20 per month for BF casthouse/BOPF readings) to provide a statistically meaningful characterization of performance, but provide that the number of photographs submitted for full review would adjust, again up or down, depending on the demonstrated level of performance.
- Method 082 photographs during periods where the near-field continuous metals monitoring of the BF casthouse, BOPF and sinter shop shows a spike (e.g. a reading X (potentially 250) percent) of the long-term average for lead, cadmium or arsenic would also be forwarded for review by the software provider.

[1627] Commenters stated that although the EPA has not identified cost as an obstacle to either continuous opacity monitoring or randomized continuous opacity monitoring, it is possible that

industry representatives will assert that the cost of the monitoring proposed herein is excessive. The two companies that own all the steel mills in the U.S. both had revenues exceeding $20 billion in 2022, and both have such large supplies of ready cash that they are engaged in either a massive stock buyback program (U.S. Steel) or an attempt to purchase U.S. Steel and own all the steel mills in the country (Cleveland Cliffs). The improved monitoring and work practices recommended herein would likely cost less than 0.03 percent of revenues, a trivial price to reduce the tons of lead, arsenic, and other highly toxic and persistent pollutants they are currently dumping on their own workers and neighboring communities.

[1627] Commenters stated that the EPA's goal in designing randomized continuous monitoring requirements – assuming the Agency cannot establish actual continuous monitoring requirements – should be to increase the likelihood of continuous good performance by having a large pool of inexpensive records and a neutral source (the random number computer program) determining which of those inexpensive records are to be further processed. Where the EPA or a state determine that a source has demonstrated poor performance, they may either process additional records themselves or require the company to do so.

[1627] Commenters stated that the EPA should also take a page out of the recent carbon proposals and promulgate a requirement to use automatic fugitive emission monitoring similar to that has been developed in Europe. (Fully automated method to estimate opacity in stack and fugitive emissions: A case study in industrial environments – ScienceDirect.) The currently approved DOCII technology requires some ability to aim the camera and a subscription to a company that has proprietary software to sort the pixels and determine opacity. This company can charge whatever the market will bear. To avoid the problems associated with a monopoly on pollution control technology the EPA should commit to develop a performance specification for digital software.

[1627] Commenters stated that the EPA should not rely on Method 9 observations but, if the Agency does, the EPA should require that when conducting Method 9 for VE observations of a group of openings, the reader must look at the point of highest opacity. Therefore, the EPA Method 9 or VE report for a group of openings might contain a "mixture" of 15-second readings, where each 15-second reading may indicate the instantaneous opacity from a location on the casthouse several feet away from other readings. It is important to note that most often there are many openings in a BOPF or a BF casthouse and it would be necessary to perform any required readings in series or to use several readers for the different groups being read at the same time. While this may increase costs above the current practice, this practice will ensure opacity is measured from all openings in the casthouse.

Response 3:

The EPA disagrees with the commenter that the use of EPA Method 9 (with ASTM D7520-16 as an alternative method of compliance) is insufficient. Regarding the limitations mentioned by the commenter, there is variability associated with the process, which is why the opacity measurements must be conducted during the operations predicted to have the greatest opacity, during a cast or the full heat cycle. In the same manner as EPA Method 9, ASTM D7520-16 is also not validated for the observation of opacity at night (see response to Section 2.1 Comment

15). Contrary to the commenter's assertion, if EPA inspectors have noted that VE observers improperly conducted opacity readings, then an objective record of what occurred is available.

While the UFIP memo identified the continuous use of ALT-082 as a potential option, the digital camera opacity method ASTM D7520-16 (or ALT-182) is not a continuous opacity method, and cannot be used in such a manner. There is also no traditional continuous opacity monitoring system (COMS) currently available that can operate across the length of a roof vent. Currently available COMS are limited to stack or duct applications. The EPA did however allow the use of the digital camera technology (ASTM D7520-16) as an option for demonstrating compliance with the opacity standard.

At this time there is no voluntary consensus standard or EPA method for the use of video cameras in the determination of opacity. The EPA is aware of the automatic fugitive monitoring study out of Europe. At this time there are no voluntary consensus standards or EPA methods using this technology. Once a method has been developed, the EPA may consider it in future rulemakings.

The EPA notes that EPA Method 9 already requires, at section 2.3 of EPA Method 9, that "[o]pacity observations shall be made at the point of greatest opacity in that portion of the plume where condensed water vapor is not present." No changes to the regulatory text were necessary due to this comment.

The commenters assertion that operators are optimizing performance during the opacity test or that having mill employees perform the opacity observations creates such a conflict of interest that they are not free to record what they actually observe is not borne out by the record. Multiple times violations of the opacity standards already employed in this rule demonstrate exceedances of the standard, as recorded and reported by facility employees. The EPA is making no changes to this rule as a result of this comment.

Comment 4:

[1627] Commenters stated that the EPA finds that just 9 steel mills emit 351 tons per year of toxic metals as UFIP emissions. At present the mills do little to prevent or control these emissions. The Agency proposes a collection of work practices and opacity limits that would reduce them by just 79 tons per year, a reduction of approximately 22.5 percent, and it would leave these mills continuing to emit 282 tons per year of toxic metals into neighboring communities.

[1627] Commenters stated that the BOPF fugitives and BF casthouse fugitives cause the lion's share of the fugitive emissions, approximately 220 tons per year out of the total 351 tons per year, or 63 percent.

[1627; 1604; 1562] Commenters stated that in the air toxics rulemaking for copper smelters – similar facilities that also emit vast quantities of fugitive toxic metals through roof vents and other openings – the EPA proposed to require that emissions from the roof vents be captured and vented to a baghouse. The EPA stated that these measures will reduce the fugitive metal emissions from copper smelters by 90 percent.

[1627] Commenters stated that the EPA has recognized that steel mills also can capture their fugitives and send them to a control device in this rulemaking, finding that "feasible controls" for fugitive emissions from the BF casthouse and the BOPF shop "have been demonstrated at several steel mills in this country and Canada, the United Kingdom and other parts of Europe, and Japan." Evaluation of PM2.5 Emissions and Controls, EPA-HQ-OAR-2002-0083-0846, at ES3-4.

[1627] Commenters stated that these mills use hoods exhausted to baghouses to capture emissions that occur when the BF is tapped and when the BOF is charged and tapped. A well designed and operated capture and control system can achieve a reduction of 95 percent or more (from the uncontrolled case) in filterable PM and HAP metal emissions from these sources. The U.S. Steel plant already has dedicated capture and control systems for the casthouses and BOPF shop. Severstal has a local hood for BOPF charging emissions that is directed to the primary control system, and some tapping emissions are captured by the open hood of the primary control system. However, Severstal plans to install dedicated capture systems for fugitive emissions from one casthouse and the BOPF shop, and these emissions will be directed to new baghouses. These installations will result in a significant improvement in emission control. For the other casthouse, the company expects that there will be a commitment to install similar controls unless a decision is made to shut down the blast furnace. One of the largest sources of filterable PM and HAP metals is the BOPF ESP during the oxygen blow, and a feasible option for reducing these emissions is to upgrade the ESPs to improve emission control performance. *Id*.

[1627] Commenters stated that even if it is not possible to capture all of the openings in steel mills BOPF shops and casthouses, capturing and ducting UFIP emissions from the openings where emission can be captured would yield enormous reductions and enormous benefits because these emissions are so highly toxic as well as being persistent and bioaccumulative. Notably, the EPA stated that some of the openings through which toxic pollution flows uncontrolled are "not part of the original design" and may be the result of poor maintenance or no maintenance. Commenters stated that emissions through such openings should not be allowed; steel mill owners and operators should, at a minimum, conduct sufficient maintenance to know where their fugitive emissions are coming from and prevent any emissions through "damaged sections of the enclosure" or other openings that should not even exist.

[1627] Commenters noted the EPA has never calculated or even estimated the portion of steel mills' 351 tpy of fugitive lead emissions are lead and arsenic. They stated the EPA indicates that the 20 tpy of metals that steel mills emit from the stacks (excluding emissions from sinter plants) includes 14.7 tpy of metals, of which lead and arsenic made up 4 tpy and 0.9 tpy, respectively which means that lead and arsenic together make up 4.9 tpy of steel mills' total metal stack emissions of 14.7 tpy, or one third. They stated applying this same one third ratio to steel mills 351 tpy of fugitive metals emissions, means that the mills' fugitive emissions of lead and arsenic are 117 tpy. Commenters continued that assuming for discussion purposes that the 9 mills' lead and arsenic emissions are all equal, each mill has 13 tpy (117/9) of fugitive lead and arsenic emissions. They further stated that assuming each mill would be required to spend the same amount to capture and duct fugitive emissions as the EPA estimated for the Freeport copper smelter, the annual cost per mill would be $2,143,972 and the cost per ton would be $2,143,972

divided by 13 tons, or $164,920.92. Commenters stated that is far cheaper than the cost per ton of lead and arsenic emissions EPA found reasonable for copper smelters, $467,000/ton.

[1627] Commenters indicated that a capture and venting system would provide important benefits for workers. They stated that right now, emissions from internal sources within these buildings are simply allowed to remain inside them until they flow out of the roof vents and other openings. They expressed that workers are allowed to steep in toxic pollution until that pollution slowly leaves the building – often just to be replaced by subsequent additional toxic pollution. Commenters indicated a strong capture system with fans powerful enough to suck the pollution out of these buildings – and suck clean air in – would reduce the levels of lead and other toxic pollutants in the buildings and reduce workers' exposure to these pollutants.

[1562] Commenters asserted that these controls are demonstrated, available, and cost effective given the parent company's annual revenue. Commenters stated that US Steel Cooperation and Cleveland-Cliffs Incorporated are the two parent companies of all the impacted sources with annual revenues of $22 and $23 billion per year; therefore, this minimal incremental cost to these parent companies is reasonable to address the health and environmental impacts of HAPs from these sources.

Response 4:

The proposed work practice standards will require facilities to develop and operate according to a "BOPF Shop Operating Plan" to minimize fugitive emissions. The use of higher draft velocities to capture more fugitives at a given distance from hoods is one of the work practice recommendations for the Operating Plan. However, capturing all fugitive emissions from and II&S manufacturing facilities and ducting them to a control device is not feasible due to the large air flow required, which would result in costly and inefficient controls.

In regard to workers' expose to toxic pollutants, worker exposure is regulated under the Occupational Safety and Health Administration (OSHA). OSHA sets standards to protect workers against the health effects of exposure to hazardous substances, including enforceable permissible exposure limits (PELs) on the airborne concentrations of hazardous chemicals. A 1991 Memorandum of Understanding between OSHA and EPA outlines the roles of these agencies with respect to worker safety. Although EPA does not conduct inspections for occupational safety, in the course of an EPA inspection, EPA personnel may identify safety concerns within the area of OSHA responsibility or may receive complaints about the safety or health of employees related to their working conditions. In such instances, EPA will bring the matter to the attention of OSHA designated contacts in the Regional Office. [5]

3.6.1 BOPF shop fugitive emissions standards

Comment 1:

[5] https://www.osha.gov/laws-regs/mou/1991-02-13#:~:text=This%20MOU%20establishes%20a%20process,national%20workplace%20and%20environmental%20statutes.

[1631] Commenters stated that if the EPA intended for the proposed work practice standards for BOPF shops to result in compliance with a 5 percent opacity standard, the Agency was wrong. The EPA did not prove that, and Industry has demonstrated the opposite. Some of the proposed work practice standards are not feasible, and even if all of the work practice standards were being met, there is no reason to believe that the BOPF shop opacity levels would remain at or below 5 percent (3-minute average) under all conditions. The enforcement records and opacity data available to the EPA should have informed the Agency that it is challenging for the facilities to meet the current 20 percent opacity standard, and that extreme measures would be needed to meet an overly stringent 5 percent standard—well beyond the application of the work practices it identified.

Response 1:

After considering comments, the EPA now recognizes some operations may need to make more significant changes than we anticipated at proposal to meet the 5 percent opacity standard at all times for the BOPF shop. After revisiting the 2022 opacity data from the shops provided to the EPA as part of the CAA section 114 information requests, EPA has concluded that we do not have sufficient time to fully analyze the data submitted in order to set a revised opacity standard for the BOPF shops. This is described in more detail in Section III.B.2. in the preamble for this final rule.

Comment 2:

[1627] Commenters stated that the EPA proposed combination of a strengthened opacity limit, work practice requirements, and monitoring requirements to reduce fugitive emissions from BOPF shops will improve the EPA's existing regulations, but do not go far enough. The EPA has identified BOPF shops as the worst source of fugitive emissions from steel mills, accounting for 174 out of the mills' 351 tons per year. The EPA has further indicated that all of the proposed requirements put together will reduce emissions from BOPF shops by just 25 tons per year. That would be a reduction of less than 15 percent from 174 tons per year and would allow steel mills to continue emitting 149 tons per year of fugitive emissions from BOPF shops. Those emissions likely include about 50 tons of lead and arsenic each year.

[1627] Commenters stated that the proposed work practices are reasonable, but neither they nor EPA's proposed 5 percent opacity limit are sufficient in themselves. The EPA solicits comment on whether it should finalize just one or the other, and the commenters' answer was "no". Eliminating either the work practice requirements of the opacity limit would make standards that are already too weak even weaker.

Response 2:

EPA acknowledges receipt of this comment. We are finalizing work practices for BOPF shops, which will reduce fugitive emissions and improve existing regulations.

Comment 3:

Commenters agreed that these opacity limits will result in HAP reductions. Commenters supported these revisions and additions and encourage EPA to not weaken any of the limits it has

proposed. Commenters stated that the EPA should keep in place all work practice requirements they have proposed for the BOPF shop.

Response 3:

Although EPA has removed the revised opacity limits, the BOPF shop will result in HAP reductions because of the BOPF shop work practice requirements. We agree with the commenter on the BOPF shop work practices and EPA is finalizing these requirements.

Comment 4:

[1631] Commenters stated that given the relatively low inlet concentration of fugitive PM and HAP emissions being sent to this control device, appreciable incremental reductions beyond those achieved through work practices alone are expected to be negligible over the course of a year. While a full shop enclosure is needed to meet a 5 percent (3-minute average) opacity limit, this will not necessarily result in a meaningful reduction in PM and HAP emissions—they would essentially go from being a fugitive emission to a stack emission. The PM MACT limit for baghouses is 0.01 grains per dscf. If we assume a baghouse air flow rate of 2,000,000 cf per minute, and converted that rate to a pounds-per-hour and tons-per-year rate, any reduction in roof monitor-related PM and HAP emissions will likely be significantly offset by the new baghouse emissions. This is in part because there are already controls in place and the proposed standards are intended to address the remaining fugitive emissions—that are low in mass and in concentrations. The lower the mass attempted to be collected, the worse the baghouse removal efficiency—so a high level of removal is not expected for BOPF shop fugitive emissions when considering the new high-volume baghouse PM emissions. While the EPA presumed an average 20 percent reduction in PM and HAP emissions based on BOPF shops meeting the proposed opacity and work practice standards, the Agency has provided no technical basis for that assumption. Based on the commenters' analysis, that level of reduction is unlikely.

Response 4: Although EPA found that capturing fugitive emissions and ducting them to a control device was feasible in the proposed copper smelter rule, EPA determined that capturing fugitive emissions and ducting them to a control device is not feasible for II&S manufacturing facilities.

Comment 5:

[1721] Commenters stated that II&S facilities will need to increase the number and scope of their opacity monitoring. Under the proposed NESHAP revisions, for just the BOPF shop, monitoring one shift every other year will increase to monitoring opacity "twice per month from all openings, or from the one opening known to have the highest opacity, for a full steel cycle, which must include a tapping event." (88 Fed. Reg. at 49413.) A camera-based method or technological solution in general could assist in managing the substantial increase in necessary readings.

Response 5:

The EPA acknowledges the commenters support for the inclusion of the camera-based ASTM D7520-16 as an option for demonstrating compliance with opacity standards.

3.6.1.1 Proposed work practices for BOPF shop fugitives

Comment 1:

[1631] Commenters stated that when considering controls to reduce fugitive PM and HAP emissions and the resulting opacity from BOPF shops, it is also important to note fundamental difference between BOPF shops and EAF shops, which the EPA regulates as a separate source category. EAF shops are generally designed with the shop roof over the furnace, forming the canopy hood for emission capture that occurs during scrap charging (furnace roof open), delta block fugitive during melting, and fugitives emitted during furnace tapping. Key characteristics of an EAF shop include:

- There are no mechanical systems in the roof area which require personnel access to the overhead during furnace operation.
- Scrap is charged via overhead crane and charge bucket which is moved after charging. The scrap charge generates a discharge of hot gases which are contained in the canopy hood.
- EAF shop evacuation can be 1,000,000 to 1,500,000 acfm depending on furnace size and shop volume.
- The area containing the EAF is designed for side draft control and volume exchange to contain emissions.

[1631] Commenters stated that on the other hand, BOPF shops are large buildings containing multiple process operations (BOP vessels, hot metal re-ladling, de-sulfurization, skimming, scrap handling, etc.). Existing BOPF shops have been constructed over a period of decades. Therefore, each shop is different in configuration and design (i.e., each shop is unique). Generally, the buildings are wide at the base, containing the charge isle, furnace isle, and teaming isle. Widths can be up to 230 feet. Above the charge isle craneway the building width narrows to the width of the furnace isle up to the top of the building. Building heights can be up to 215 feet, with a total volume of 20 million cubic feet. The area above the vessels contains the primary furnace hood, lance port, and for suppressed combustion designs the wet scrubber, de-mister, and the vessel ID fans. The length of the building is determined by the number of vessels and other process units. Typically, the length can be 300 to 700 feet. Key characteristics of a BOPF shop include:

- For top blown vessels the oxygen lance is inserted and extracted by the lance crane located at the top of the furnace isle. The mechanism for the movement of the lances is mechanically complex and requires the service of maintenance personnel above the vessel. The top floor also contains flux conveyors and storage bins which deliver lime and additives to the vessels during blowing.
- The area above the service floor presents unique hazards to personnel, including high heat and potential exposure to process gases which may result in oxygen enriched or oxygen deficient atmospheres, as well as the potential for carbon monoxide (CO) gas exposure. The buildings are designed with adequate ventilation as a key element and any changes may be detrimental to human health.
- The temperature in the building overhead is determined by the natural draft ventilation between the building lower level and the building roof vent (i.e., gulls). The volume of gases emitted is determined by heat released in the building, ambient temperature, and building design. Closing building openings would restrict inflow air volume and increase indoor temperature.

- BOPF shops contain between two and three vessels which have over lapping process events (e.g., charge, blow, tap, etc.) which influence the building overhead temperature and natural draft exhaust volumes.

[1631] Commenters stated that the technical requirements and consequences of enclosing a BOPF shop are substantially different than enclosing an EAF shop.
[1631] Commenters stated that on the list of proposed work practice standards for BOPF shops above is keeping all openings that were not in the original design of the BOPF shop closed except roof monitors to the extent feasible and safe. BOPF shop operations are (1) largely enclosed already (i.e., an approximate 90% enclosure) and (2) equipped with both primary and secondary emissions controls, including baghouses, scrubbers, and electrostatic precipitators with unique design features of hood and ductwork that improve particulate matter and opacity levels. Even with these measures, the BOPF shops are not achieving full compliance with Subpart FFFFF's current 20 percent opacity limit (3-minute average).

[1631] Commenters stated that to assure compliance with the opacity limit, data indicate that "fully enclosing" the building would be necessary, even though it would produce only minimal additional emission reductions, based on actual performance and emissions in 2019-2022 and as reflected in an appendix to their comment. The EPA calculated an industrywide reduction for all 11 BOPF shops of only 25 tpy of HAPs if all BOPF shops followed these and other work practice standards and met the 5 percent opacity standard. Commenters believed the EPA underestimated the expense to keep the BOPF shops fully closed, whether it is even technically or economically feasible to do so.

[1631] Commenters stated that BOPF shops encompass a large volume and contain multiple process operations which are unique to each facility. Each building is equipped with an opening at the roof level to allow heat to be exhausted by natural draft. These roof-monitor style vents are designed as "clam shell" type structures that allow venting without water entry during rain. The width of the roof structure is significantly narrower than the grade level width. Grade-level openings allow for operating equipment entry and egress, ensure ventilation that provides safe operating conditions for workers, and aid in thermal buoyancy for emissions to remain contained and rise within the building.

[1631] Commenters stated that the proposed standards cannot be achieved simply by closing some of these openings. If the ventilation is closed, heat will accumulate in the upper sections of the shop, which is damaging to equipment (conveyors, motors, electronic equipment, etc.). The increased heat is also a safety concern because of the heat stress impact to workers. If fully enclosed, the trapped heat would make working on the upper floors of the BOPF unbearably hot and constitute a great risk to worker safety and damage equipment. Worker safety concerns must be addressed. Thus, to achieve compliance, an improved ventilation system would be needed to meet the work practice standards, keep workers safe, and avoid heat damage. This includes natural ventilation and local ventilating fans present throughout the building. As a result, closing openings would require facilities to provide for increased ventilation and ingress of fresh air into the BOPF shop through other means, at significant cost. Building design considerations for proper ventilation must be taken into account.

[1631] Commenters stated that the type of ventilation system needed would require full BOPF building evacuation and capture of fugitive emissions. The evacuation volume would need to be based on the removal of heat, not based on the anticipated volume needed to keep the building under negative pressure. The evacuation system would be significant and require increased structural support. Support column design loading decreases with building height (floors), and the top structure is not designed to support additional weight. The placement of exhaust ducts on the shop roof would require significant strengthening of columns from grade to roof. Theoretical calculations for an example shop indicate that an exhaust rate of 6.1 exchanges per hour would be required to limit the increase in air temperature to 10°F above ambient temperatures. The calculated exhaust volume for the example is 2,100,000 acfm at 105°F. Full evacuation of a typical BOPF shop would therefore require large fabric filters and fan brake horsepower. Several attempts at full building evacuation have been tried but were not successful. Attempting to keep a building fully closed is also counterproductive because ambient air influx is required for building draft and exhaust. For the capture system to work, air inflow would need to be at or near ground level. This would require all other openings to be closed, which is not possible or practical considering the requirement to regularly move raw materials, product, slag, and materials out of the area. In other words, for all other openings to be closed would require stopping operations. The openings in the BOPF shop are constantly being used by large mobile equipment, including locomotives hauling full and empty iron railcars, scrap boxes, and slag haulers.

[1631] Commenters stated that it is also not clear on how the increased 2.1 million acfm volume of air flow will affect areas where the air is coming into the BOPF shops, whether and how the shop could be opened to allow an increased volume of air into the shop, and whether this would create other safety issues. The required footprint for placement of a pulse-jet type fabric filter to control 2,100,000 acfm at a nominal air/cloth ratio is not available in the area immediately surrounding most of the BOPF shops, and very long duct runs would be required to reach available locations within the site for placement of the fabric filter. Expected ID fan horsepower for a 2,100,000 acfm capture system could exceed 18,000 brake horsepower (BHP) and would likely require installation of an additional 13,000-volt electrical power line and transformer, which greatly increases the cost to install such a system. As discussed in an appendix to the comment, the incremental electrical energy uses alone for BF casthouses and BOPF shops would generate more than 300,000 tons of CO_2 per year and increase annual operating costs. Because of the low concentration of fugitive HAP PM that would collected through a fabric filter, it is unlikely that the removal efficiency will be very high, and it is possible that the entire process will simply convert fugitives to stack emissions with no net reduction in HAP emissions but an increase in CO_2 and other emissions associated with the generation of electricity.

[1631] Commenters stated that closing the shop entirely would present other problems too. For example, it could prevent the use of blow out panels, which are safety elements purposefully installed at sources for when wet scrap events cause a pressure surge in the building, which would otherwise badly damage the building's siding. The design of some facilities would actually prevent enclosure. For these reasons, the EPA should not move forward until it has taken these concerns into account and demonstrated the feasibility of this type of control and whether it would lead to the expected decrease in emissions and ability to meet a 5 percent opacity standard (3-minute average) at all times and under all conditions.

Response 1:

EPA's field experience has shown that low cost work practice changes, including setting minimum hot metal charge times, ensuring scrap is clean and free from ice/moisture, and reducing slopping can reliably result in no opacity at the roof monitor, which aligns with the data supplied to the EPA via the ICR. EPA is not finalizing any updated opacity limits for the BOPF shops.

Comment 2:

[1631] Commenters stated that the proposal would require the use of higher draft velocities of existing particulate matter control systems already in place and designed for certain specifications. The EPA proposed that by increasing the draft velocities of existing baghouses or other control devices, the capture of fugitive emissions would be increased. The EPA's proposal is flawed because simply increasing draft velocities of existing control emissions will not necessarily result in the increased capture of fugitive PM. Adjusting draft velocity is not a simple adjustment and must be evaluated within the context of the overall system design. In many circumstances, it may not even be possible. The only way to achieve increased draft velocities at existing hoods is if the system is not being operated at its full design capacity, and thus has existing unused potential that can be utilized. Maintaining higher draft velocities could also interfere with operations within the BOPF shop because equipment and associated controls should be run as designed. For example, an ESP requires a certain amount of retention time to collect emissions and has ranges of velocities and temperatures where it is designed to be most effective. Simply increasing the draft to an ESP will, in turn, increase the emissions out of the stack. Collection systems for ESPs, or baghouses or scrubbers, require a fast enough flow to avoid entrainment or premature dropout, but not so fast that it causes uneven distribution, erosion, or simply lowering pressure without actually increasing flow through the system.

[1631] Commenters stated that facilities already typically operate their systems at their design capacity to maximize capture of emissions. Increasing draft velocities is possible under current designs only if a BOPF shop is not already operating to its system's design capacity. Otherwise, substantial system redesign and significant investment would be required. The EPA has not suggested a redesign or large new capital investment, and has certainly not taken any costs into account for such activities. The work practices have the potential, in some facilities, to actually limit total canopy/secondary vent roof scavenging systems from collection of emissions, which would be counterproductive. This is especially true where portions of the roof monitors have already been sealed to aid in fume collection, which would require exemption of wall ventilation louvers from this type of requirement.

[1631] Commenters stated that increasing draft velocities would also be counter to the design of certain suppressed-combustion BOPF hoods intended to operate at slightly positive pressure at the mouth of the furnace for emissions capture reasons. Increasing draft also increases ingress air at the furnace/skirt opening, which increases combustion of process gases (carbon monoxide and a little hydrogen) and, in turn, adds to the heat load and associated stresses on the hoods, creating additional safety concerns and potential for explosive reactions. Added stresses on the hood could lead to more leaks, downtime for repairs, and a reduced hood life (none of the costs of which has the EPA taken into consideration here). Higher draft velocities also impact controls in

adverse ways, reducing overall baghouse effectiveness, increasing failure rates and the potential for spark holes for baghouses, and requiring increased water flow for proper cleaning for scrubbers. For shops that used water-cooled hoods, this could lead to unreasonable risks of water leaks, which present significant safety concerns because of the potential for water to violently react with molten metal in the BOPF shop. The increased draft also puts stress on the gas cleaning efficiency and increases wear in the ductwork and other equipment.

[1631] Commenters stated that for these reasons, the EPA should remove any references to increasing the draft velocities for air pollution control equipment as a work practice standard—or make it clear that this required only when the draft is not already being maximized.

Response 2:

The EPA disagrees that changes are necessary to the proposed language at 40 CFR 63.7793(f) as a result of these comments. At 40 CFR 63.7793(f), the proposed regulatory text states "[y]our BOPF Shop Operating Plan may include, but is not limited to," that is the use of any of the work practices in (1) through (8) are not required for each facility, but that they should be considered in the development of the BOPF Shop Operating Plan. Second, regarding the use of higher draft velocities at 40 CFR 63.7793(f)(7), the proposed regulatory text already stipulates that the use of higher draft velocities is "to capture more fugitives at a given distance from hood, if possible." If the draft is already maximized, then further changes to create a higher draft would not be possible. No changes are necessary to the final rule as a result of these comments.

Comment 3:

[1631] Commenters stated that the proposal to require optimizing the positioning of hot metal ladles with respect to hood face/furnace mouth should not be adopted. The ladle is operated manually by a skilled worker who needs to be able to react to the heat of molten iron being poured and the immediate situation. The operators are already properly positioning the hot metal ladles, and the design of the BOPF shops limits the crane operator's positioning. The EPA should not consider work practice requirements associated with ladle positioning because it is already optimized per shop design and operations. Also, operators must be able to immediately make adjustments during a pour if needed for safety. The EPA has not demonstrated that the requirement would reduce any emissions, and industry questions whether it would because emissions are not solely dependent on the ladle position; emissions are also impacted by the furnace and control configurations, all of which are site specific. For these reasons, the EPA should eliminate the proposed work practice standard related to the positioning of hot metal ladles.

Response 3:

The EPA disagrees with the commenter that changes to the regulatory text are required as a result of this comment. As noted in the previous response, the proposed regulatory text at 40 CFR 63.7793(f) states "[y]our BOPF Shop Operating Plan may include, but is not limited to," that is the use of any of the work practices in (1) through (8) are not required for each facility, but that they should be considered in the development of the BOPF Shop Operating Plan. The EPA recognizes that hot metal turbulence correlates with emissions. Fast and vertical pouring will increase emissions. The EPA is recommending that, as part of the BOPF Shop Operating

Plan, that operators optimize the positioning of hot metal ladles, which impacts the charge speed and pouring geometry, and thus emissions. The site specific nature of these issues is why the EPA did not suggest specific measures for the optimization, but that it should be developed on a site specific basis. There are no changes necessary to the rule as a result of these comments.

Comment 4:

[1631] Commenters stated that the proposal would require each facility to set a maximum limit on the hot iron pour/charge rate in units of pounds/second. Facilities typically already begin with a slower iron pour at the start, and any pour rate or tilt angle is already optimized for each shop. BOPFs are not equipped with the required crane scales and instrumentation associated with hot metal charge or flow to control pour rate or any means to measure a pour rate during the first 20 seconds. Further, safety concerns militate against adding potentially multiple additional layers of alarming to ensure compliance with this parameter because it takes operator focus away from safely pouring the hot metal. Again, the ladle is operated manually by a skilled worker who needs to be able to react to the heat of molten iron being poured and the immediate situation. Despite this fact, the EPA's 2023 UFIP Memo (Table C-2) states that all facilities already implement some form of this procedure and are getting credit for a small reduction in baseline emissions because of it. Because of safety considerations and existing optimizations already occurring based on best practices, a specific numeric rate in a work practice plan should not be required. In the alternative, plans could incorporate a site-specific minimum average pour time for charging of an entire iron ladle that is an established and effective work practice to control hot metal charging emissions. If this approach is acceptable, the standard should include a trial period where the BOPF shop would assess the proper slow pour rate and also sufficient time to make any process instrument changes necessary to aid operators in compliance assurance.

Response 4:

EPA knows that setting specific rates and angles will make operations more consistent and help operators achieve reliably low emissions. EPA admits that different furnaces may have different rates and angles, as such, furnace operators are free to see the minimum and maximum to suit their furnace.

Comment 5:

[1631] Commenters stated that the proposal would require facilities to identify and list the specific actions that operators will take when slag foaming approaches the mouth of the vessel that would be used to help reduce or prevent slopping or foaming. The EPA has not demonstrated that prevention of slopping and foaming is feasible or would result in any meaningful reduction in HAP emissions. The causes and any corresponding actions related to slopping are case- and facility-specific for which operators make decisions based on experience and site-specific conditions at the time of such an occurrence. Most occurrences of slopping are short in duration and minimal and do not result in elevated emissions to the ambient air. Facilities have and will continue to take steps to minimize occurrences of slopping because they are undesirable from an operational standpoint because excess slag results in decreases to yield and production. Even with procedures in place, not all slopping events are avoidable or preventable.

[1631] Commenters stated that because adding detailed actions that may be taken to minimize slag foaming will not change current practices, Commenters recommended against including this as a work practice standard which would add a compliance burden without resulting in any change in operator actions or reduction in emissions.

Response 5:

BOPF vessels contain high temperature metal and slag, and allowing that material to exit out of the top of the vessel, called slopping, is a concern for safety and environmental reasons. When slag overflows, or slops, the material hits the floor and creates opacity that would not have otherwise existed. EPA known that slopping events can be very emissive and is ensuring furnace operators take action to reduce the occurrence.
Slogging events are avoidable by a range of monitoring and response actions. Furnace operators can monitor slag level and can react to foaming with flux/lime addition to avoid slopping. There are both slop prediction and slop detection software and instrumentation systems commercially available.

Comment 6:

[1627] Commenters stated that there were other work practices to reduce fugitive emissions from BOPF shops that the EPA identified but did not propose to require. The EPA stated that "preventive measures can be done to reduce generation of emissions that contribute to opacity. These measures include keeping iron and slag runner covers in place at all times except when runner or cover is being repaired or removed for inspection purposes (2-hour repair limit)." Further, "[t]o identify all potential opacity sources and measures to reduce fugitive emissions," the EPA could specify that operating plans must "List all events that generate visible emissions (including slopping) and state the steps the company will take to reduce the incidence rate."
[1627] Commenters stated that other measures the EPA did not propose include:

- Minimum hot iron pour/charge rate (minutes).
- Optimize furnace tilt angle during charging.
- Prohibit burning material, such as bags, pallets and other material in the shop.
- Use higher draft velocities to capture more fugitive emissions at a given distance from the hood.
- Perform a ventilation study to maximize secondary (fugitive) emissions capture by hooding.
- Install additional equipment to minimize fugitive emissions:
  - Add extension (flanges) from primary hood into charging and tapping aisles for better draft and to shorten distance to emission source.
  - Add extension of pouring spout on hot metal charging ladle to move emission point closer to or under hood.
  - Add small openings in furnace doors to allow monitoring of temperature and other parameters to avoid opening doors.
  - Add wall partitions or ducts to direct air into local hoods to prevent escape from building.
  - Add canopy hoods to enhance fugitive collection for local hoods.

[1627] Commenters stated that the EPA did not provide a reason for leaving these work practices out of the proposal. The EPA's failure to include these measures in the final rule or provide a rational basis for not including them would be arbitrary and capricious.

Response 6:

EPA is finalizing key work practices that represent the MACT level of control.

Comment 7:

[1604] Commenters stated that the EPA should require better work practices and the use of COMS or CEMS to measure fugitives instead of having visible emissions read every two weeks.

Response 7:

The EPA disagrees that CEMs or COMS are appropriate for fugitive emissions. There are currently no continuous opacity monitors or continuous emissions monitors commercially available for fugitive sources.

3.6.1.2 Proposed opacity limit for BOPF shop fugitives

Comment 1:

[1627] Commenters stated that the EPA proposed to strengthen the opacity limit from 20 percent to 5 percent. Commenters supported this aspect of the proposal, but noted that the EPA did not claim that a 5 percent opacity limit reflects the "maximum" degree of reduction that is "achievable" or even evaluate what the maximum achievable degree of reduction is. Instead, the EPA observed that "based on the data we received, the maximum 3- minute opacity readings for the BOPF shops at four facilities are less than 5 percent." (88 Fed. Reg. at 49,412-49,413.) Steel mills shouldn't be allowed to emit any uncontrolled pollution from BOPF shops, and the EPA should evaluate a zero opacity limit based on system for capturing these fugitive emissions and sending them to a control device. The opacity limits for emissions from BOPF shops are the only numeric limit on this source, which is the worst source of toxic emissions at steel mills. Commenters stated that these limits have been too weak for too long, and the EPA should determine the maximum degree of reduction that is achievable and set opacity limits that require that degree of reduction.

Response 1:

After considering comments and revisiting the 2022 opacity data from the shops provided to the EPA as part of the CAA section 114 information requests, EPA has concluded that we do not have sufficient time to fully analyze the data submitted in order to set a revised opacity standard for the BF casthouses and the BOPF shops. This is described in more detail in Section III.B.2. in the preamble for this final rule.

Comment 2:

[1631] Commenters stated that the EPA has brought enforcement actions for various different BOPF shops for violating the current 20 percent opacity standard and were skeptical why the EPA alleged that there have been developments indicating that the BOPF shops can meet a 5

percent standard. Commenters provided a tables showing that none of BOPF shops analyzed by industry can meet the EPA's arbitrarily proposed 5 percent opacity limitation, including the ones that the EPA points to as being the best performers.

Response 2:

After considering comments and revisiting the 2022 opacity data from the shops provided to the EPA as part of the CAA section 114 information requests, EPA has concluded that we do not have sufficient time to fully analyze the data submitted in order to set a revised opacity standard for the BF casthouses and the BOPF shops. This is described in more detail in Section III.B.2. in the preamble for this final rule.

Comment 4:

[1631] Commenters stated that if the EPA seeks to revise the current opacity standard for BOPF shops, it should first maintain the current 20 percent standard and increase the frequency of EPA Method 9 testing. Specifically, industry suggested an increase in the testing frequency from twice per permit term, i.e., twice per 5 years, to quarterly monitoring i.e., 20 times per 5 years. Testing at this frequency would be a tenfold increase that would assuage any EPA concern regarding compliance assurance and monitoring costs.

Response 4:

After considering comments and revisiting the 2022 opacity data from the shops provided to the EPA as part of the CAA section 114 information requests, EPA has concluded that we do not have sufficient time to fully analyze the data submitted in order to set a revised opacity standard for the BF casthouses and the BOPF shops in this final rule. This issue is described in more detail in Section III.B.2. in the preamble for this final rule. However, as described in the preamble, EPA is increasing the frequency of Method 9 testing, as suggested by the commenter.

Comment 5:

[1631] Commenters stated that the use of the 20 percent standard is justified. First, because the EPA relied on section 112(d)(6) for the proposed change, the Agency needs to show that the change is both necessary and that it has taken into account "developments." The EPA would also need to consider cost, which has not been adequately done at this time. Commenters conducted a UPL analysis based on the BOPF shops' maximum opacity from the 2022 section 114 collection snapshot data for BOPF shop opacity. Using that data and a 99 percent UPL, commenters determined that a more appropriate standard for opacity is 20 percent, which is statistically consistent with the available longer-term data for the BOPF shops that appropriately reflects seasonal and operational variations. Commenters provided their UPL analysis.

Response 5:

As discussed in detail in the response to section 3.2.2 comment 1 and the preamble to the final rule with respect to the opacity standards for the casthouse, the EPA disagrees that the UPL approach is appropriate for opacity. We are, however, not finalizing a new opacity standard for

BF casthouses. See the discussion in the preamble for information and discussion of comments that led to changes to the final standard.

Comment 6:

[1631] Commenters stated that the EPA proposed a 3-minute averaging period for the 5 percent opacity limit. This is an inappropriately short averaging period given the significant reduction from the current 20 percent standard that includes the same 3-minute averaging period. Compliance with the vast majority of opacity standards across all CAA programs is based on a 6-minute averaging period, per Method 9. If the EPA were to reduce the opacity limit below 20 percent, a 6-minute averaging period would be appropriate and also necessary.

[1631] Commenters stated that while a 6-minute average would potentially smooth out some of the spikes that might occur and cause an exceedance on a 3-minute average, it would not be sufficient or appropriate to require a reduction of the existing opacity standard in the first place.

Response 6:

The EPA disagrees with the commenter that the 3-minute averaging period is inappropriate for these sources. The EPA did not change the averaging period for these sources, but maintained the existing averaging period. The data used in evaluating the existing standard was in 3-minute averages. It would be inappropriate to shift the standard to a without a basis. The EPA is, however, not finalizing a new opacity standard for the BOPF shop.

3.6.2 BF casthouse fugitive emissions standards

Comment 1:

[1594; 1562] Commenters agreed that these opacity limits will result in HAP reductions. Commenters supported these revisions and additions and encourage the EPA to not weaken any of the limits it has proposed.

[1562] Commenters supported requiring both opacity limits and work practice standards.

[1592] Commenters stated that the EPA should, at the least, require as a work practice requirement that operators "keep all openings, except roof monitors, closed during tapping and material transfer events" for BF casthouses.

Response 1:

The EPA acknowledges the support for opacity limits from the commenter. However, The EPA was not able to adequately analyze all the available data before the deadline for this final rule ordered by the court in *California Communities Against Toxics*. Until further revision, the opacity limits in the NESHAP for existing BF casthouses will remain at 20 percent based on 6-minute averages for the BF casthouse. In the final rule, for BF casthouses the EPA is finalizing the following additional the requirement: that operators "keep all openings, closed during tapping and material transfer events except roof monitors and other openings that are part of the original design of the casthouse."

Comment 2:

[1627] Commenters stated that the EPA proposed a combination of a strengthened opacity limit, work practice requirements, and monitoring requirements to reduce fugitive emissions from BF casthouses. These requirements will improve the EPA's existing regulations, but do not go far enough. The EPA identified BF casthouses as the third worst source of fugitive emissions from steel mills, accounting for 46 out of the mills' 351 tons per year. The EPA further indicated that all of the proposed requirements put together will reduce emissions from BF casthouses by just 14 tpy, a reduction of just 30 percent, and would allow steel mills to continue emitting 32 tpy of fugitive emissions from BF casthouses. Those emissions likely include more than 10 tons of lead and arsenic each year.

Response 2:

EPA acknowledges receipt of this comment. As described in the final rule preamble, the EPA was not able to adequately analyze all the available data before the deadline for this final rule ordered by the court in *California Communities Against Toxics*. Until further revision, the opacity limits in the NESHAP for existing BF casthouses will remain at 20 percent based on 6-minute averages for the BF casthouse. This will lead to no reductions in emissions from the BF casthouse until further revision of the rule.

Comment 3:

[1627] Commenters stated that fugitive emissions from BF casthouses can and should be captured and routed to control devices rather than being emitted uncontrolled into neighboring communities. In addition, the EPA should establish stronger work practice requirements.

[1627] Commenters stated that the EPA did not propose any work practices to reduce fugitive emissions from BF casthouses except "that the facilities will need to keep all openings, except roof monitors, closed during tapping and material transfer events (the only openings that would be allowed during these events are those that were present in the original design of the shop)."

[1627] Commenters stated that the EPA identified work practices "as control measures for UFIP sources that were analyzed for cost-effectiveness under a technology review conducted as per requirements in CAA section 112 (d)(6)." (2020 Technology Review.) These were:

- Develop and operate according to a "BF Casthouse Operating Plan" to minimize fugitive emissions and detect openings and leaks;
- Measure opacity frequently during the tapping operation (e.g., during four taps per month) with all openings closed (except for roof monitor) using EPA Method Alt082 (camera) or Method 9;
- Keep doors and other openings, except roof monitors, closed during all transfer operations to extent feasible and safe; and
- Keep runner covers in place at all times except when runner or cover is being repaired or removed for inspection purposes (2-hour repair or observation limit).

[1627] Commenters stated that the record document showing OMB's edits of the EPA's memo addressing the control of UFIP emissions shows that OMB eliminated – without any explanation – the requirements to develop a plan to minimize fugitive emissions and the requirement to keep runner covers in place. It also reduces from 4 to 2 the number of "taps per month" operators have to monitor opacity from BF casthouses.

[1627] Commenters stated that OMB has no business overriding the EPA's judgment by deleting emission reduction measures the EPA has found to be cost-effective, and the EPA's acceptance of such interference is disappointing given the absence of any explanation for deleting these requirements. Neither the EPA nor OMB suggests either of these requirements is ineffective or too costly. Ultimately, Congress delegated to the EPA, not OMB, the authority and obligation to implement that CAA, and it is the EPA's job to exercise the discretion to regulate steel mills and to provide a rational basis for any rulemaking decisions. Commenters stated that by accepting OMB's redline edits without explanation, the EPA surrenders its authority to OMB and fails to do its job. Commenters stated that the EPA's failure to provide a rational basis for not requiring that steel mills keep runner covers in place at BF casthouses and not requiring mills to develop an operating plan to minimize fugitive emissions, and operate according to that plan, is arbitrary and capricious.

Response 3:

The EPA was not able to adequately analyze all the available data before the deadline for this final rule ordered by the court in *California Communities Against Toxics*. Until further revision, the opacity limits in the NESHAP for existing BF casthouses will remain at 20 percent based on 6-minute averages for the BF casthouse. The EPA is not finalizing work practice standards for BF casthouses.

Comment 4:

[1627] Commenters stated that it is commonly known to EPA inspectors that II&S facilities only read opacity at BF casthouse roof monitors and ignore emissions from openings on the sides of the casthouse and from the gap between the casthouse and the furnace. To improve the opacity monitoring from casthouses, a facility's standard operating procedures (SOP) can include identification of all openings in the casthouse that could emit opacity, identifying which openings typically have the highest opacity, and specifying which openings to be observed for opacity concurrently as a group of openings. The standard operating procedures that should be required for BF casthouses should identify the openings and groups of openings to be measured for opacity on a casthouse drawing; the SOP could then be reviewed and approved by their management and delegated permit authority.

Response 4:

The EPA disagrees that further action is necessary beyond the proposed addition of 40 CFR 63.7823(c)(3) which clarified that, for the blast furnace casthouse, opacity observations should be made at each opening. However, The EPA was not able to adequately analyze all the available data before the deadline for this final rule ordered by the court in *California Communities Against Toxics*. Until further revision, the opacity limits in the NESHAP for existing BF casthouses will remain at 20 percent based on 6-minute averages for the BF casthouse.

Comment 5:

[1627] Commenters stated that cameras and EPA Alt-082 (DOCS) should be used to monitor the opacity from these BF casthouses. One of the benefits of EPA Alternative 082 is that many more openings can be viewed at one time, possibly saving the company money in the long term. Also, when a DOCS is used, the images of one observation can be reanalyzed if the EPA or delegated authority believes the point of highest opacity was not used in calculating the opacity. The ability to reanalyze opacity readings provides the opportunity for better agreement of observations and the casthouse opacity limit. The DOCS provides a more objective, better substantiated opacity readings compared to Method 9 and would improve transparency of opacity monitoring results."

[1627] Commenters stated that EPA Enforcement and DOJ entered into a Consent Decree in 2017 that required continuous night-time DOC II monitoring of fugitive emissions from the penthouse at a mill with four EAFs. (Consent Decree in United States of America v. Maynard Steel Casting Co.) Although EAFs differ from II&S mills, both types of facility emit fugitive emissions from buildings. Accordingly, the Agency's DOC monitoring requirements in this consent decree are appropriate for BF casthouses at II&S mills as well as EAFs.

[1627] Commenters provided a figure taken from this Consent Decree that sets out the DOC II monitoring scheme for determining day and night opacity from several roof top monitors at that facility.

[1627] Commenters stated that the consent decree explains that "As detailed in a May 1, 2013, transmittal to the USEPA from Maynard, which is hereby incorporated by reference, there are limited areas in the roofs of the melt department of the foundry through which uncaptured emissions have the potential to migrate out of the building, to the extent that such areas are not otherwise closed or sealed. The areas include, but are not necessarily limited to gaps in steel panels on the roof, pedestrian doors, and rotary roof exhaust vents (non-operating). Notably, a penthouse runs along the approximate east-west centerline axis of the "Greensand Foundry", as depicted on Figure 1, which is flanked on both the north and the south sides by hinged, 4' x 8' windowed panels. Natural draft openings associated with these panels are possible if they are not completely closed, or if windows are damaged or are otherwise misaligned. Such openings are reasonably anticipated to be the most likely path for concentrated fugitive emissions from EAF operations to exit the building (particularly in the area immediately above an operating EAF) due two primary factors:

- Proximity to the Source of PM Emissions: Uncaptured emissions tend to dissipate the further they migrate from the source and as the plume expands; therefore, fugitive emissions may reasonably be more concentrated when leaving the building via openings that are closest to the EAF.
- Intensity & Redirection of Air Mass: The intensity of the thermal rise tends to decrease as thermal energy dissipates with increasing distance from the source of the thermal energy. The higher the intensity, the greater the likelihood for uncaptured PM emissions entrained in the air mass to more forcibly exit the building via available openings. Moreover, as the rising air mass encounters the underside of the penthouse roof, it begins to roll, thereby changing direction from vertical to horizontal and then down again. Within the penthouse, the roll initially redirects the air mass towards the windowed panels on the north and south sides of the foundry." *Id*.

[1627] Commenters stated that The Iron and Steel Association has opposed the use of DCOT given that the result of more regular and reliable monitoring would give a clearer picture of its compliance record. Despite its claims that there are “unresolved and outstanding questions,” commenters did not identify any actual “issues with the DCOT Method and provider.” Indeed, the American Society for Testing and Materials, based on testing, has approved a standard procedure - ASTM D7520-09 – for use of DCOT to determine the opacity from an emission source using a digital camera coupled with software-based analysis. ASTM’s approval was limited to stacks less than 7 feet in diameter. Subsequently the EPA adopted and approved ALT-082 allows for the use of ASTM Method D7520-09 with additional caveats in lieu of Method 9 to meet opacity measurement requirements under 40 CFR parts 60 and 63. In 2015 EPA Region V asked OAQPS whether the DCOT II system could be used to establish opacity violations where the stack diameter was larger than 7 feet. OAQPS responded as follows:
As we understand it, this limited scope was included in ASTM D7520-09, not due to concerns that the method would yield inaccurate results from stacks greater than 7 feet in diameter, but rather due to caution on the part of the ASTM workgroup, as there was only a limited amount of data for large diameter stacks at the time.

Staff in our group have reviewed the three recent ASTM D7520-09 Method 301 (40 CFR part 63, Appendix A) validation studies referenced in your request and believe that they provide an adequate technical basis for using ALT-082 opacity readings on larger diameter stacks (greater than 7 feet in diameter) as credible evidence in air enforcement activities. …. * * * * Although ALT-082 was not originally approved for application to stacks greater than 7 feet in diameter, we are unaware of any technical reason that data from this alternative method could not be used as credible evidence in assessing compliance.” (ALT-082_Memo.pdf (virtuallc.com))

[1627] Commenters stated that the available record documents that the DOC II system was tested by the industry association and then those test results were reviewed by the EPA. Each of those entities found this system to be within the accuracy required for Method 9 (and, the vendor argues, more accurate than humans. The EPA should establish a Performance Standard to address concerns about there being only one vendor of approved software at this time. If there is a legitimate issue as to accuracy in a particular setting, companies could be allowed to submit simultaneous Method 9 observations (again, every tap, every emission point) to document and rebut any errors in DCOT monitoring.

Response 5:

The EPA disagrees that ASTM D7520-16 should be required for demonstrating compliance with the opacity standard. The reasons for not requiring the use of ASTM D75220-16 are discussed in detail in the *Summary of Public Comments and Responses for Risk and Technology Review for Integrated Iron and Steel Manufacturing Facilities* (EPA-HQ-OAR-2002-0083-1100) Section 6 in the response to comment 7. In the same manner as EPA Method 9, ASTM D7520-16 is also not validated for the observation of opacity at night (see response to Section 2.1 Comment 15). The EPA is making no changes to the applicability of ASTM D7520-16 in this rulemaking.

Comment 6:

[1721] Commenters stated that when the EPA asked U.S. Steel about how it might approach the additional opacity readings in its Edgar Thomson casthouses, U.S. Steel suggested “there may be

safety concerns (and costs to address those safety concerns) with reading all openings (e.g., constructing ladders to reach an appropriate observation point, dealing with conducting readings when there is ice on a ladder or roof) that are not addressed in the discussion of these options." (EPA-HQ-OAR-2002-0083-1376.) Commenters stated that the EPA cannot demand compliance with a standard that creates unnecessary risks, but recommends using cameras instead.

Response 6:

The EPA disagrees with the commenter's assertion that cameras would be a solution to the safety issues raised, unless they are permanently installed. The use of hand-held cameras that are available commercially would also entail accessing the same locations to achieve the correct viewpoints for opacity measurement. However, the EPA continues to allow the use of ASTM D7520-16 as an option for compliance that can be used to demonstrate compliance with the opacity standard.

3.6.2.1 Proposed opacity limit for BF casthouse fugitives

Comment 1:

[1631] Commenters stated that the opacity standard for BF casthouse fugitives should maintain the current 20 percent standard with perhaps an increase the frequency of EPA Method 9 testing. Specifically, commenters suggested an increase in the testing frequency from twice per permit term, i.e., twice per five years, to quarterly monitoring i.e., 20 times per 5 years. Testing at this frequency would be a tenfold increase that would assuage any EPA concern regarding compliance assurance and monitoring costs.

[1631] Commenters stated that the use of the 20 percent standard is justified. First, because the EPA is relying on section 112(d)(6) for the proposed change, the Agency needs to show that the change is both necessary and that it has taken into account "developments." The EPA would also need to consider cost, which has not been adequately done at this time. Commenters have conducted a UPL analysis based on the BF casthouse fugitive maximum opacity from the 2022 section 114 collection snapshot data for the BF casthouse opacity. Using that data and a 99 percent UPL, they determined that a more appropriate standard for opacity is 20 percent, which is statistically consistent with the available longer-term data for BF casthouses that appropriately reflects seasonal and operational variations. Commenters provided their UPL analysis.

Response 1:

After considering comments and revisiting the 2022 opacity data from the shops provided to the EPA as part of the CAA section 114 information requests, EPA has concluded that we do not have sufficient time to fully analyze the data submitted in order to set a revised opacity standard for the BF casthouses and the BOPF shops in this final rule. This issue is described in more detail in Section III.B.2. in the preamble for this final rule. However, as described in the preamble, EPA is increasing the frequency of Method 9 testing, as suggested by the commenter.

Comment 2:

[1627] Commenters stated that the EPA proposes to strengthen the opacity limit from 20 percent to 5 percent but, unlike for BOPFs, based on a 6-minute average rather than a 3-minute average. Commenters supported strengthening the opacity limit, but noted that the EPA did not claim that a 5 percent opacity limit reflects the “maximum” degree of reduction that is “achievable” or even evaluate what the maximum achievable degree of reduction is. Commenters stated that the EPA does not explain why the Agency is proposing the less stringent 6-minute averaging time, and the Agency’s failure to do so is arbitrary and capricious.

[1627] Commenters stated that the EPA did not explain why, given the choice of a longer averaging time, the Agency is not also setting a lower opacity limit. The EPA acknowledges that the Agency has data for 3 mills that are already below its proposed limit and that 2 of those 3 mills are operating at less than 2 percent opacity over far longer periods of time. The EPA did not indicate it has any data for any mill that is above 5 percent opacity. Given these facts and that the same 5 percent opacity limit with a 6-minute averaging period is less stringent, the EPA needs to provide a rational explanation for not setting the opacity limit at some level lower than 5 percent, such as 2 percent, the level that two mills are already meeting over extended periods of time.

Response 2:

After considering comments and revisiting the 2022 opacity data from the shops provided to the EPA as part of the CAA section 114 information requests, EPA has concluded that we do not have sufficient time to fully analyze the data submitted in order to set a revised opacity standard for the BF casthouses and the BOPF shops in this final rule. This issue is described in more detail in Section III.B.2. in the preamble for this final rule.

3.6.2.2 Potential alternative BF fugitives opacity limit for small periods of time

Comment 1:

[1631] Commenters stated that because the proposal to establish an absolute 5 percent limit does not take into account the range of operations or impacts resulting from variability, it is clear that some periods of operation above 5 percent opacity will occur, even with proper operation. To ensure that a new standard is achievable given the much more stringent level, the EPA should revise the proposed standard to provide for opacity greater than the reduced limit for two six-minute periods of time per cast in order to capture normal fluctuation events that occur during normal operation.

Response 1:

EPA acknowledges receipt of this comment.

Comment 2:

[1562] Commenters did not support the use of alternative limits. These alternative limits make enforceability of the standards more difficult.

Response 2:

EPA acknowledges receipt of this comment.

4. Fenceline Monitoring

Comment 1:

[1592] Commenters stated that the strategy of waiting until emissions are released into the community does not meet the CAA's standard of preventing pollution. The EPA has chosen to rely on the fenceline monitoring to "address" fugitives instead of requiring control of fugitives at the source. Commenters stated that the proposed rule should be revised to prevent emissions.

Response 1:

The EPA has set requirements in this rule that address the fugitives at the source, including work practices, limits on opacity, and MACT floor limits for fugitive point source HAP emissions. The goal of the fenceline monitoring work practice in this rule is to improve the management of these fugitives and that reductions envisioned through the implementation of the final standards are realized pursuant to CAA section 112(d)(6).

Comment 2:

[1631] Commenters stated that the EPA justifies the fenceline monitoring program by stating that it will ensure that the estimated emissions from UFIP sources are accurate. The verification the EPA anticipates that would "reduc[e] the uncertainty associated with emissions estimation and characterization" (88 Fed. Reg. at 49,515) is unlikely to be realized for several reasons.

[1631] Commenters stated that the EPA failed to consider the contributions of chromium to the monitor data made by non-UFIP sources that likely led to the monitoring data reflecting higher concentrations than estimated through the RTR modeling of the source category (point sources and UFIP sources) alone. The chromium concentrations measured by fenceline monitors will reflect non-UFIP onsite contributors, such as storage piles and unpaved roads, emissions from third-party contractors onsite, BOPF slag emissions, and emissions from onsite slag storage areas. The monitors will also reflect many different offsite contributors, including ports and busy highways, in addition to other industrial facilities. There are a large number of potential non-source-category contributors to each of the four II&S facilities where the ICR fenceline monitoring programs took place. Despite having access to this detailed report and analysis, the EPA inexplicably and incorrectly assumed for purposes of the current proposal that the monitored chromium concentrations were overwhelmingly associated with the UFIP sources and no others—and failed to establish that monitoring is needed to confirm chromium emissions from the UFIP sources.

[1631] Commenters stated that the monitor data will not distinguish contributions among the seven different UFIP category types, each of which has its own emissions profile and emits inconsistently at different rates and at different times.

[1631] Commenters stated that the EPA makes a large number of assumptions to estimate emissions from the UFIP sources and to estimate the expected emission reductions resulting from compliance with the proposed opacity and work practice standards. Neither the EPA, nor

any other individual or entity, could ever verify these assumptions. The EPA has no way to quantify current emission rates from UFIP sources, to determine the quantity of emissions that will be reduced through their compliance with the proposed new opacity limits and work practice standards, or to determine the impact that any resulting reductions would have on chromium concentrations at the fenceline.

[1631] Commenters stated that the EPA made a number of assumptions when analyzing predicted ambient concentrations of chromium from UFIP sources through air quality modeling which cannot be verified or confirmed.

[1631] Commenters stated that because operations fluctuate from month to month and year to year, the reductions the EPA predicts might not be realized. Industry could, in theory, trigger an action level solely due to increased permitted production.

[1631] Commenters stated that the EPA has not established any correlation between UFIP fugitive emissions and chromium concentrations at the fenceline, nor is this possible.

[1631] Commenters stated that because of these shortcomings, no comparison between measured concentrations of chromium at the fenceline and modeled concentrations of chromium at receptors along the fenceline will provide the ground-truthing the EPA claims.

[1631] Commenters stated that the EPA should not attempt to establish an action level without a known or demonstrated correlation between UFIP emissions and monitored chromium concentrations at the fenceline because it results in an arbitrary threshold that could lead to unaccounted-for costs.

Response 2:

The EPA recognizes the existence and influence of non-UFIP onsite contributions. The impact of on-site non-UFIP emissions sources is reflected in the action level, as these emissions are also contributors during the CAA section 114 fenceline monitoring. In the proposed and final rule, facilities are allowed to correct for offsite near field contributions using a site-specific monitoring plan. The EPA recognizes that additional monitoring and analysis, along with process knowledge may be necessary for the conduct of any root-cause investigation to identify the underlying cause, as indicated in the proposed and finalized language at 40 CFR 63.7792(d). The month-to-month fluctuations mentioned by the commenters are why the action level is set as a rolling annual average rather than a shorter term, which could be dominated by infrequent permitted process events that may only have a brief impact on a facility’s fenceline concentrations.

Comment 3:

[1594] Commenters stated that the EPA's proposed fenceline standard does not adjust fenceline concentrations downward to exclude (as “background”) any chromium contributed by on-site emission sources that are not subject to the specific requirements of this NESHAP. The EPA’s proposal is consistent with the EPA’s proposed NESHAP revisions for the synthetic organic chemical manufacturing industry/group I & II polymers and resins categories and coke oven batteries and pushing, quenching, and battery stacks source categories. Commenters supported

the EPA's proposal to include non-source-category emissions in the fenceline standard because it will lead to more consistent corrective measures and provide greater protection to nearby communities.

Response 3:

The EPA acknowledges the commenter's support of the proposed fenceline monitoring standard as it relates to inclusion of on-site non-source category emissions.

Comment 4:

[1631] Commenters stated that the EPA appears to be converting a fenceline monitoring program—which is most often used to help assess risk or to determine whether an area's air quality is in compliance with national ambient air quality standards—into a compliance assurance method for fugitive emission sources' emission standards. Commenters stated they are not aware of a precedent for the use of ambient monitors for chromium or any other HAP metals as a method of assuring that fugitive and intermittent sources of particulates comply with applicable standards, nor should they be. The commenter asserts that while the EPA states that the program "will allow for the effective management of fugitive emissions of other HAP metals" from the UFIP sources (88 Fed. Reg. at 49415.), the EPA has not demonstrated any correlation between fugitive emissions from UFIP sources and measured concentrations of chromium at the fenceline. The results of the ICR fenceline monitoring program certainly did not provide any such correlation. Commenters provided figures that compare the UFIP emissions based on production data for each Gary Works' monitor sampling period and the corresponding measured chromium concentrations at the Gary North and Gary South monitors. These figures show that there is poor correlation between the emissions of chromium from UFIPs and the measured chromium at the fenceline monitors.

[1631] Commenters stated that the EPA has also offered no verification to demonstrate what PM, HAP, or chromium-specific emission reductions may be realized if the UFIP sources comply with the proposed opacity standards and work practice standards. EPA relied solely on its own "engineering judgment" without technical support in suggesting what emission reductions would occur through compliance with the standards. The EPA used some "rule of thumb" guides and essentially made very generalized estimates without emissions data to back up the estimates. The EPA also did not take any site-specific factors into account, such as the location of UFIP sources and their distance to the fenceline, predominant wind direction, and the actual quantity of reductions needed to comply with the new standards. Without a demonstrated correlation between fenceline concentrations of chromium and UFIP sources' fugitive emissions and the extent to which those sources are in compliance with applicable new opacity and work practice standards, the proposed monitoring program cannot reasonably be expected to produce the results the EPA intends. These deficiencies prevent any expectation that the monitoring program would, in any purposeful way, affect the management of UFIP sources or ensure that they will be complying with the new opacity limits and work practice standards. The EPA cannot simply speculate about the significance of ambient fenceline concentrations of chromium without providing meaningful and relevant information about fugitive emissions from UFIP sources, the reductions in emissions that will be realized if those sources are meeting applicable opacity and work practice standards, and what impact these emissions would have on monitored chromium concentrations at the fenceline. Commenters stated that to do so is arbitrary and capricious.

[1631] Commenters stated that the EPA has apparently crafted the chromium fenceline monitoring program, at least in concept, based on the benzene fenceline monitoring program applicable to petroleum refineries which has been in effect and operational for a few years. While both programs are intended to address fugitive emission sources, the two programs are quite dissimilar in other respects and the justifications that EPA used to support the benzene program do not apply to the chromium program. The following list identifies some of the more important differences.

- Benzene leaks are well-understood with demonstrated correlations to ambient concentrations, while chromium emissions from UFIP sources are not well-understood and lack any demonstrated correlation to ambient concentrations. Without a known correlation, weather, operational, and other transients will lead to random results based on their confluence for each sampling event.
- With benzene, the monitored results can be correlated to fugitive emissions from process upsets, tank landings, and other sources through well-demonstrated leak detection methods. These correlations can be used to follow up with other ambient monitoring data to identify and reduce emissions. For the proposed II&S rule, however, direct correlations between chromium concentrations at the fenceline and UFIP sources of fugitive emissions will be much more tenuous, which will lead to random results that are not traceable to any particular event or source.
- Because benzene is a volatile organic compound, passive monitors continuously take samples 24 hours a day for two-week periods of time. Because fugitive chromium is contained within particulate matter, the process for taking samples is entirely different. The samples could not reasonably be undertaken at the same frequency because of the need for the monitor to use a high-volume air sampler and the active engagement of personnel.
- Because of the low cost, simple technology, and easy installation of benzene monitors that do not require power, at least 12 to 24 monitors are typically installed at a facility, which provides for better spatial coverage, compared to the EPA's proposal for chromium monitors that require electricity to operate, are hundreds of times more expensive, and offer more limited coverage.
- EPA estimated a cost of approximately $40,000 per year per facility for the benzene program. The actual costs for moderate-sized refineries are approximately $90,000 per year per facility— twice as high as the EPA originally estimated. On the other hand, the EPA estimates that each facility subject to the chromium program would spend significantly more: $164,000 per year in recurring annual costs. The actual costs are likely to be more than double what the EPA projects, making the disparity between the two programs even greater.
- Sources of benzene are limited and known. Benzene emissions occur when inventoried products are released through leakage which can be slow and constant and can typically be traced, especially when hand-held monitors are available to assist with identifying such continuous leaks. Fugitive PM emissions from various types of UFIP sources are entirely different and not traceable in the same manner (or really at all) because they are intermittent, very short-term (seconds to minutes at a time), and inconsistent. In addition, the only known real-time monitoring available to detect chromium is extremely expensive at approximately $150,000 per monitor for purchase plus an estimated

installation cost of $30,000 per monitor (with no known opportunities for leasing), yet such monitors would not likely help identify UFIP sources not complying with work practice standards or opacity limits—and the EPA has not demonstrated the usefulness of such chromium monitors in any setting.

- The EPA explained that the benzene program would reduce the need for regular local inspection requirements which would result in a cost savings. For the chromium program, the EPA is establishing a number of new VE testing requirements for UFIP sources to ensure that the new opacity and work practice standards are being achieved, and the fenceline monitoring program would duplicate those testing requirements (assuming, as the EPA alleges, there is a demonstrable correlation between the fugitive emissions and fenceline concentrations). The fenceline monitoring program is therefore an unnecessary and inappropriate duplication at a significant expense with no added benefit.
- Benzene emissions are invisible and certainly a Method 22 or Method 9 VE observation would not be effective. On the other hand, fugitive particulate matter emissions from UFIP sources are visible when the concentrations are high enough, and compliance with applicable limits can be determined based on Method 22 and Method 9 VE observations or implementation of work practices that reduce fugitive emissions—which is why the EPA has proposed these methods for UFIP compliance demonstrations.
- When establishing the benzene program, the EPA explained that virtually all releases of benzene at a refinery were from fugitive sources and the releases would occur at or near ground level. Because the releases were already at ground level when released, and because benzene is heavier than air (causing it to sink), the highest concentration of any offsite impact would be near the ground at the fenceline, making monitoring along the perimeter of the facility a few feet off the ground ideal. The EPA has already found that if the fugitives are released at an elevation much higher than ground level, then they are likely to go over the fenceline monitor and not be recorded (which was the case with copper smelters). This is also true, at least in part, for II&S because a majority of the fugitives from UFIP sources are released at a height of 100 to 200 feet above ground level, as reflected in a provided table.

[1631] Commenters stated that because the EPA will not achieve the intended goals through the proposed chromium fenceline monitoring programs for all of the reasons cited above and in particular because there are no demonstrated correlations between UFIP sources and the ambient concentrations of chromium being monitored at the fenceline, the EPA should withdraw the proposal.

Response 4:

The EPA disagrees with the commenters' assertion as to the purpose of fenceline monitoring. The commenter appears to be conflating ambient air monitoring with fenceline monitoring. Fenceline monitoring is not used to assess risk or determine if a facility is in compliance with ambient air qualtiy standards; the measurements are taken from within the facility boundary and are not ambient air measurements by definition, though similar sampling methodologies are used. Fenceline monitoring has been promulgated as a work practice previously, e.g., in the refinery NESHAP (40 CFR Part 63, Subpart CC), and included in this rulemaking with a goal to improve management of fugitive emissions. With respect to the commenter's daily comparison of UFIP emissions and production data to the north and south monitors at Gary Works, we note

that several UFIP emissions sources are not continuous nor directly related in the short-term to production (e.g., slips and beaching). While an increase in production may lead to additional emissions from the fugitive sources, the intermittent operation of some of these sources, as indicated by the commenter makes the direct correlation of fenceline concentration to production difficult without further data. The fenceline monitoring program is not meant to induce further reductions in fugitive emissions beyond those produced by the emissions standards.

The EPA recognizes that the benzene fenceline monitoring used a simpler, cost-effective passive methodology. Accounting for this difference in technology is why long-term samples were not proposed, but short-term periodic sampling, similar to the frequency proposed for ethylene oxide in the Hazardous Organic NESHAP (Synthetic Organic Chemical Manufacturing Industry: Organic National Emission Standards for Hazardous Air Pollutants (NESHAP) - 40 CFR 63 Subparts F,G,H,I proposed rule, published on April 25, 2023) was used. Similarly, only four sampling locations were utilized in recognition of the additional costs and complications associated with the requirement of an electrical connection for the sampling method. The EPA recognizes that the costs are different between these two systems, but the commenter provided no basis for their cost estimate. The EPA continues to estimate the costs of the fenceline program as it is. Unlike refineries, where the number of sampling locations varied depending on the fenceline of the facility, some of that variability in cost is removed for this rulemaking due to the use of 4 sample locations. The EPA did not propose the use of real time monitors for chromium (for further details see the response to section 4.2 comment 10).

The EPA disagrees with the commenter that EPA Method 9 or EPA Method 22 observations render the need for fenceline monitoring unnecessary. While benzene emission are not visible to the naked eye, leaks containing benzene may be found through the leak detection and repair (LDAR) program. Similarly, to a degree particulate emission are visible by EPA Method 9 and EPA Method 22. These methods are applied to the UFIP sources as direct measurement of fugitive emissions are not possible. The use of fenceline monitoring provides a more direct measure of the pollutant of concern than the third order measurement method of opacity, which acts as potential surrogate for particulate matter where it cannot be directly measured. PM in turn is acting as the surrogate for non-mercury metals.

The EPA agrees with the commenter that some sources of emissions at integrated iron and steel facilities are above ground level. However, all sources of fugitive emissions are not above ground level (*e.g.*, slag handling, beaching, and ground level openings on the casthouse and BOPF shop), and as indicated by the data collected during the CAA section 114 request fenceline monitoring, measurable levels of chromium are detectable at the fenceline above that predicted as a result of modeling.

Fenceline monitoring will improve the management of these fugitives emissions and ensure that the reductions envisioned through the implementation of the final standards are realized, as such, EPA is choosing to finalize the fenceline monitoring work practice as proposed.

Comment 5:

[1590] Commenters stated they represent a distinct segment of the U.S. steel manufacturing industry that is not directly covered by the II&S NESHAP, however, several issues raised in the

rulemaking are potentially relevant to EAF (electric arc furnace) steel operations, particularly those related to fenceline monitoring. Commenters stated that the proposed fenceline monitoring is unjustified for several reasons, including: (1) the EPA's (overly conservative) risk modeling results show that risks to public health are well below levels that are considered acceptable under the CAA; (2) the EPA fails to provide a rational connection between the fenceline monitoring, or proposed action levels and their stated purpose of assessing whether fugitive work practices are being implemented effectively; and (3) the EPA underestimates cost of the proposed fenceline monitoring program, in large part because the Agency has not finalized the novel sampling method requirement intended to mandate. In addition, the EPA has not accounted for other costs, including:

- Actual estimated costs provided by vendors and contractors (approximately double the EPA's estimates);
- Additional monitors and associated data needed to determine onsite and offsite contributors to HAP concentrations recorded at the fenceline;
- Conducting root cause analyses and taking corrective actions;
- Sampling labor, handling, analytical, data management, and reporting; and
- Increased demand inflating such costs.

[1590] Commenters stated that accordingly, the proposed fenceline monitoring, and the consequent burdens on facilities, are unjustified.

[1590] Commenters stated that in responding to comments on the recently finalized NSPS for EAF steel manufacturing, the EPA correctly concluded that fenceline monitoring was not appropriate for EAF steel mills.

[1590] Commenters disagreed that the EPA should establish fenceline monitoring as part of this review. As described in the proposal, the EPA followed the statutory requirements in reviewing and revising the PM standard of performance for new, modified, and reconstructed EAF and AOD sources. The EPA considered the required factors for BSER and standard of performance as described in preamble sections for the final rule at IV. A, B, C, D, and E. The statute does not require fenceline monitoring.

[1590] Commenters stated that in reviewing NSPS subpart AAa, as described in the proposal, information from the EPA's RBLC, facility operating permits, and other regulatory development efforts was reviewed. From this review, the EPA did not identify any facilities in this source category conducting fenceline monitoring. There is no knowledge that any facilities in the category are conducting fenceline monitoring. Fenceline monitoring is only effective for ground level or close-to-the-ground emission release points, which is not the case for EAF.

[1590] Commenters stated that the EPA has only required fenceline monitoring for three categories to date, all of which address one pollutant—benzene—that is not a regulated pollutant under CAA section 111.

[1590] Commenters stated that while NSPS and NESHAPs are under different sections of the CAA, and serve different regulatory purposes (i.e., the NSPS is primarily technology-driven, while the NESHAP involves risk review), the premise EPA relies upon – that "[f]enceline

monitoring is only effective for ground level or close-to-ground emission release points" – holds true for II&S operations because nearly all of the UFIP sources for which the EPA is proposing new control requirements have elevated release points.

[1590] Commenters stated that the EPA has made clear that fenceline monitoring is ineffective, and therefore inapplicable, to sources that are not at or near ground level.

[1590] Commenters stated they support the comments filed jointly by the American Iron and Steel Institute in this rulemaking and United States Steel Corporation.

Response 5:

The EPA disagrees with the commenter that fenceline monitoring is not justified. The EPA has accounted for all significant costs associated with fenceline monitoring. While the commenter suggests that estimated costs are double that estimated by the EPA, details were not provided to assess this claim. Additionally, while facilities may choose to employ additional monitors to determine onsite and offsite contributions, this is not part of the requirements of the rule. The finalized action levels are based on compliance with the finalized rule. As such, someone complying with the provisions provided as part of this rulemaking is not expected to exceed the action level and trigger corrective action. Therefore, there is no additional cost burden to a facility, though the temporal aspect of when a leak or malfunction is identified and addressed may change.

In response to the commenter's point that the EPA has only required fenceline monitoring for three categories to date, all addressing benzene, that is incomplete. The EPA has promulgated a single rule requiring fenceline monitoring, for benzene at refineries and proposed along a similar timeframe as this rule, the HON and Group 1 Polymers and Resins (Neoprene Production) proposal included fenceline monitoring for multiple other compounds, including 1,3-butadiene, chloroprene, ethylene oxide, ethylene dichloride, and vinyl chloride in addition to benzene and the Coke Ovens subpart L proposal including fenceline monitoring for benzene. The EPA evaluates fenceline monitoring as part of our CAA section 112(d)(6) review, and this review is not limited to just benzene but into the application of fenceline monitoring to a particular source category.

Finally, despite the commenter's claim that nearly all UFIP sources for which the EPA is proposing new control requirements have elevated release points, several of those UFIP sources do have emissions at ground level (*e.g.*, slag handling and beaching, and ground level openings on the casthouse and BOPF shop). Also, as noted previously, the fenceline monitoring results collected during the CAA section 114 request detected concentrations of chromium at the fenceline above that anticipated as a result of modeling.

Comment 6:

[1627] Commenters stated that to provide better fenceline monitoring, the EPA should require modeling to determine the points of greatest potential impact from fugitive and point source emissions from these very large facilities and the use of onsite meteorology and continuous multi-metal analyzers capable of source attribution to meet a well-supported ambient concentration limit. The number and location of the monitors would be determined by the

modeling outcome (subject to review by the EPA and the public). This monitoring would measure the full suite of metals continuously and facilitate more prompt corrective action than the EPA's proposal. However, the EPA's limited monitoring to date does not provide a basis to set a number that would be enforced by such near field continuous monitoring.

Response 6:

Fenceline monitoring locations are within the ownership or control of the facility to ensure access by the facility at all times to change sample media and perform other maintenance. The availability of proper sample locations that are accessible within the facility and secure from inadvertent damage, as well as in compliance with private property concerns, are issues that are difficult to assess on anything other than a case-by-case basis. The use of fenceline locations also provides certainty as to the action level that, where the sampling locations vary in distance from the facility, would need to vary according to the facility. We are able to set this work practice because we know a facility's impact at the fenceline as a result of the fenceline monitoring conducted during the CAA section 114 request, which was used to determine the action level. We would not have that same level of confidence if the monitoring locations were located in the community as it would be necessary to extrapolate from the measured values at the fenceline to locations of indeterminate, variable distance, or model emissions based upon emission factors to account for the UFIP sources. For these reasons the EPA did not propose, nor is it finalizing, community monitoring systems.

Comment 7:

[1575; 1683; 1562; 1493; 1496] Commenters commended the EPA on efforts to provide transparent and accessible information to the general public and environmental experts. To enable such transparency and accessibility to data on HAP from II&S facilities, the EPA should require timely reports from the facilities, installation and dissemination of data from systems to monitor fugitive emissions, and immediate alerts to the public and government officials on acute pollution events.

[1575] Commenters stated that the EPA has committed to provide the public with accurate, timely and easily understandable information regarding ambient air quality through, for example, the Air Quality Index (AirNow.gov). Detailed data from monitors is accessible to interested parties such as environmental groups or experts at https://www.epa.gov/outdoor-air-quality-data. These result in a better informed public and empowers local environmental and health agencies.

[1575] Commenters stated that unfortunately, accessing and understanding air pollution data from II&S facilities is not as easily obtainable, despite the large impact they have on the surrounding communities. For example, information on Edgar Thomson Steel Works required a compilation of state, county, or federal/EPA. In addition to the complexities of access and analysis, these sources do not provide timely alerts regarding unplanned, potentially dangerous emission events for the public.

[1575] Commenters stated that the need for such transparency is self-evident. Only recently, U.S. Steel Corporation agreed to pay a penalty and make extensive improvements to the Edgar Thomson facility for longstanding air pollution violations. The CREATE lab, in partnership with the Breathe Project (https://breatheproject.org/) has built and sustains a network of visible

pollution-monitoring cameras in the Pittsburgh, PA area, known as BreatheCams, and they have captured numerous emission events from US Steel's Edgar Thomson facility (https://breathecam.org/). Some of these events are likely to have released pollutants of concern that the community should have been alerted to in real-time. Local agencies, organizations and the public are entitled to timely access to information on pollution in their communities, both acute events and ambient levels.

[1575] Commenters stated that the EPA supports this need for transparency and accessibility. The proposed regulations include provisions to make quarterly fenceline monitoring data available to the public on the Web Factor Information Retrieval system (WebFIRE). However, this requirement is limited to only one feature of emissions, and it is not clear how frequently the data be posted.

[1575] Commenters stated that for better and more transparent reporting of air pollution from the II&S facilities, the EPA should ensure that

- Annual emission reports from the regulated II&S facilities are made available to the public. These should compile annual emission amounts and the measured HAP concentrations (e.g. Fenceline monitors, opacity data) even if they do not exceed the proposed limits.
- II&S facilities should be required to install systems to continuously monitor fugitive emissions (namely, using EPA's Method 22), with direct access to the data stream made publicly available and with full access given to the EPA and local government agencies. This will enable the EPA and local government agencies to assess the frequency of fugitive emissions, take action when needed to protect the public, and provide a record in case of questions or disputes. For transparency, the public should have access to the data as well. II&S manufacturers might argue that the public will not be able to distinguish between controlled and/or benign emissions (such as steam) and fugitive, potentially hazardous ones. This is incorrect: The public can be educated on these issues, for example by posting relevant examples on the webpage displaying the camera feeds. Example language for this education can be found on https://smoke.createlab.org/learn.html.
- The II&S manufacturing facilities should be required to immediately report unexpected release of HAP, as defined in the proposed regulation. The report should be made to relevant local government agencies (such as health departments and regulatory agencies charged with enforcing the CAA) as well as on a dedicated website open to the public.
- Regulators should facilitate discussions with affected communities about monitoring results. The purpose of these discussions should be to mobilize local knowledge to give context to data, collaboratively formulate questions for further investigation, and identify priorities for immediate action–not merely to instruct or reassure the public. These can follow the format suggested by, for example, Drexel University's Fair Tech Collective's "Recommendations for Fenceline Monitoring Requirements at Petrochemical Facilities, Designing regulation for transparent, reliable public access".

Response 7:

We note that the fenceline monitoring methods for chromium essentially precludes the ability of providing real-time access to fenceline monitoring data by the public because the potential

candidate measurement methods themselves are not real time and require that samples be analyzed in the lab. Therefore, we have finalized reporting requirements to provide reasonable amount of time for analysis and review of the results. For these reasons, this fenceline monitoring work practice standard will not provide, nor is it intended to provide, immediate notification of high emission events and other information.

The EPA disagrees with the commenter that the proposed rule text is not clear as to when the quarterly fenceline monitoring reports are due to be submitted. At 40 CFR 63.7841(h), the last sentence stipulates that each quarterly report must be submitted no later than 45 days following the end of the reporting period (*i.e.* end of the quarter). Once submitted to CEDRI, the reports are held for a thirty day processing period for review by the appropriate EPA region, state, local, or Tribal authority before being released to WebFIRE. This timeframe is discussed in detail in *Electronic Reporting Requirements for NSPS and NESHAP Rules* (EPA-HQ-OAR-2002-0083-0909). In addition to fenceline reporting, the existing rule already requires that semiannual reports and performance test reports also be submitted to CEDRI, and would subsequently be available in WebFIRE.

The semiannual report includes excess emissions from the source category, but does not require redundant reporting for fenceline monitoring. EPA is not requiring the inclusion of emissions reporting when the emission limits are not exceeded as part of the semiannual compliance report.

The EPA disagrees with the commenter that EPA Method 22 has a continuous monitoring component. The EPA is not proposing a requirement for a continuous camera feed in this rulemaking.

The EPA acknowledges the commenters' suggestions for improving public availability of fenceline monitoring data. While the suggestions are not within the scope of this rulemaking, the EPA will consider these comments once the rulemaking is final and as resources and Agency priorities permit.

Comment 8:

[1598] Commenters supported the EPA's new requirement to establish fenceline monitoring for chromium.

Response 8:

The EPA acknowledges the commenter's support for fenceline monitoring.

4.1 Fenceline Monitoring Data Analyses

Comment 1:

[1594] Commenters stated that the EPA compared measured fenceline metal HAP concentrations with modeled metal HAP concentrations at U.S. Steel's Gary Works facility in Gary, IN. However, the EPA did not perform a similar comparison for the other three facilities (U.S. Steel Granite City, Cleveland-Cliffs Burns Harbor, and Cleveland-Cliffs Cleveland Works) at which fenceline monitoring was conducted as part of the EPA's CAA section 114 collection request. The EPA's failure to do so means that the EPA is not able to determine whether metal HAP

emissions are underestimated at these facilities and subsequently whether risk from metal HAP emissions at these facilities has been underestimated. Commenters stated that to correct this, the EPA should perform the modeling necessary so that measured and modeled concentrations of metal HAP can be compared.

Response 1:

The EPA disagrees with the commenter that the EPA needs to perform a similar comparison at the other three facilities. Fenceline monitoring is being implemented under CAA section 112(d)(6) and is unrelated to the risk. The comparison to U.S. Steel's Gary works was made as the Gary was the example facility in the Risk and Technology Review where the UFIP emissions were modelled. Gary was chosen as the model site as it has the largest production capacity, the highest estimated HAP emissions from steel-making sources (i.e., facility emissions not including sinter plant emissions), and the highest estimated UFIP emissions. The EPA did not undertake modelling and comparison for the remaining facilities for the final rule.

Comment 2:

[1631] Commenters stated that the 2022 section 114 collection data included a six-month monitoring program. The EPA purports that monitored fenceline concentrations may show an increase above previous emission estimates. As the EPA explains:
For lead, the highest measured 6-month average fenceline concentration (from the 2022–2023 CAA section 114 request sampling) is 3 times greater than the highest modeled concentration for the example facility (US Steel Gary) evaluated in the 2019 RTR proposed rule (84 FR 42704, August 16, 2019) and the 2020 RTR final rule (85 FR 42074, July 13, 2020). . . . For all locations at all facilities, the averages were well below the NAAQS level, with the highest average only 20 percent of the NAAQS, indicating that lead concentrations are [still] below levels of concern at the fenceline for this source category." (88 Fed. Reg. at 49,414.)

[1631] Commenters have reviewed monitored data for lead and cannot replicate the EPA's purported calculation of a ratio that would show any such increased values for lead. Specifically, commenters reviewed the monitored concentrations from the Gary North and Gary South monitors for the fenceline monitoring program and compared them to modeled concentrations corresponding to each of the 30 monitor sampling periods. The modeling was conducted using production data and meteorological data for each of the 30 monitor sampling periods to representatively match up the modeled concentrations with the monitored concentrations. The highest monitor-to-model ratio for lead is less than half the ratio cited in the proposed rule.

[1631] Commenters stated that the EPA's modeling for the 2019-2020 proposed and final rule was conducted using meteorological data from 2016 and actual emissions data from the throughput and stack test data (collected as part of the 2011 section 114 collection) in 2011-2012. More problematic, however, is the use of meteorological data that does not coincide with monitoring period. Meteorological conditions can vary from year to year and season to season. Commenters conducted modeling using AERMOD and the methodology described above to use representative emissions and meteorological data (https://www.in.gov/idem/airquality/modeling/air-dispersion-meteorological-data/) for the dates of the sampling program. Receptors were placed at the locations of the Gary North and Gary South monitors to estimate modeled concentrations and compare them to the monitored

concentrations. The thirty samples collected at each monitor were averaged over the six-month period. The modeling files which used daily production data to estimate emissions for each monitor sampling period were provided in an appendix to the comment. The results of the analysis show that the modeled concentrations corresponding to the six-month period of monitoring are about the same as the monitored concentrations for lead during the same period.

[1631] Commenters stated that given these new findings and the EPA's decision to rely on meteorological data that does not coincide with the monitoring period, the EPA should review its calculation and available data and revise its findings accordingly. Moreover, 2017-2023 lead levels from state monitors are consistently an order of magnitude less than (or less than 10% of) the lead NAAQS 0.15 ug/m^3. These lead values also show no appreciable change after the temporary idling, confirming the II&S sources have no appreciable impact on lead in the ambient air.

[1631] Commenters stated that the EPA's method of comparing the modeling results conducted for the 2019 RTR proposed rule (84 Fed. Reg. 42704) and the 2020 RTR final rule (85 Fed. Reg. 42074) to the 2022 fenceline monitoring data results in the EPA analysis does not constitute a true model-to-monitor comparison. A true model-to-monitor comparison should be conducted using actual emissions and meteorological data from the same time period as the fenceline monitoring program in 2022 for this source category (i.e., May through November 2022). But this is not what the EPA has done. The EPA conflated incongruous data points and, once corrected, data shows that modeled concentrations at the receptors are similar to the monitored concentrations for lead.

Response 2:

The EPA agrees with the commenter that the comparison of the 2020 RTR modeling to the 2022 fenceline monitoring does not reflect a direct monitor to model comparison. We also agree with the commenter that results will be different if a different data set and timeframe is used, as the commenter used individual daily production rates to model emissions for a particular day. The EPA agrees that that the relative ratio between the modelled concentration and that measured by fenceline monitors, be it at a factor of 0.9 as suggested by the commenter for the Gary North monitor or an overall ratio of 3, is within the margin of error for a gross comparison such as the 2022 monitoring data to the 2020 RTR modelled data.

As noted in the preamble to the proposed rule (88 FR 49414), we compared the fenceline monitor data to the NAAQS, and noted that values found are well below the NAAQS, with the highest value at 20% of the NAAQS. The EPA did not propose, nor are we finalizing a lead fenceline monitoring component. However, as discussed in the preamble to the final rule, we intend to gather more fenceline monitoring data for lead in 2024 at Integrated Iron and Steel facilities to better characterize fugitive lead emissions.

Comment 3:

[1631] Commenters state that the EPA posits that, "[f]or arsenic, . . . [c]ompared to the 2019–2020 modeled results, the highest measured fenceline concentration for arsenic is 6 times higher than the highest modeled concentration at the same example facility." (88 Fed. Reg. at 49,414.) Commenters reviewed the monitored and EPA modeled concentrations for arsenic and cannot

replicate the EPA's purported ratio calculation that would show any such increased values for arsenic. Using the same methodology described above for lead, commenters compared the modeled concentrations estimated from production rates and meteorological data corresponding to each of the monitor sampling periods for receptors placed at the same locations as the Gary North and Gary South monitors. The resulting monitor-to-model ratio is less than one-third of the ratio cited by the EPA in the 2023 Proposal and, in fact, demonstrates that monitored concentrations were lower than what was modeled. This further indicates that the arsenic emissions estimated using the 2012 test for the Gary BF #14 is flawed and should be corrected because it results in a substantial overestimation of arsenic emissions and therefore risk. The EPA should provide the basis for its statement in the docket, review the calculation and available data, and revise its findings accordingly. In addition, arsenic data from the EPA AirData Air Quality Monitors demonstrate the very low ambient concentrations which are consistently well below EPA's risk level of 0.0043 $\mu g/m^3$.

[1631] Commenters stated that the reported arsenic concentration measured from May 2022 to November 2022 at the Gary South monitor, located closest to the MIR, does not show public health risks for this source category above acceptable limits, with overall risk remaining low. The six-month average arsenic concentration at the South monitor is based on a limited data set of 30 samples, 31 percent of which were non-detect, which the EPA collected as part of the 2022 section 114 collection, and the commenters calculate that the six-month average monitored arsenic concentration of 0.005 $\mu g/m^3$ at the Gary South monitor equates to acceptable cancer risk.

Response 3:

The EPA agrees with the commenter that the comparison of the 2020 RTR modelling to the 2022 fenceline monitoring does not reflect a direct monitor to model comparison. We also agree with the commenter that results will be different if a different data set and timeframe is used, as the commenter used individual daily production rates to model emissions for a particular day. The EPA did not propose, nor are we finalizing an arsenic fenceline monitoring component.

The value of modeled arsenic at Gary is 0.0025 $\mu g/m^3$. We compared this value to the highest monitor average value from May through September at the Gary North monitor, which is 0.01463 $\mu g/m^3$. This seems to be influenced by the measurement of 0.178 $\mu g/m^3$ on 7/13/2022 at this monitor.

Comment 4:

[1631] Commenters stated that the EPA purports that average "[c]hromium concentrations measured at the fencelines of the four facilities ranged from 0.001 to 0.175 ug/m^3. Compared to the 2019-2020 modeled results, the highest measured fenceline concentration of Cr is 28 times higher than the highest modeled Cr concentration at the same example facility." (88 Fed. Reg. at 49,414.) Commenters, however, reviewed monitoring data and are not able to locate the highest average chromium monitor value of "0.175 $\mu g/m^3$" which the EPA cites in the preamble. Commenters modeled concentrations representative for each of the 30 monitor sampling periods using the same methodology described for lead. When the modeled concentrations from receptors located at the Gary North and Gary South monitors for the fenceline monitoring program were compared to the six-month average monitored value at each monitor location for

chromium, the resulting monitor-to-model ratio of 3.2 is far less than the ratio cited in the 2023 Proposal. The EPA should provide the basis for this significant conclusory statement regarding monitored chromium values in the docket. Commenters cannot replicate the EPA's finding of such a high increase in comparison to modeling. The EPA should review the calculation along with available data and revise its findings accordingly.

[1631] Commenters stated that the highest six-month average based on their review was 0.155 µg/m³ at Gary Works, which is in line with the six-month delta-c concentration of 0.154 µg/m³ (0.155-0.001 µg/m³). When concurrent meteorological data is used, the modeled concentration at the receptor located at the Gary North monitor is approximately 3 times lower than the monitored concentrations for total chromium at the Gary North monitor and less than 2 times lower at the Gary South monitor during the same period, which is far less than the 28 times ratio that the EPA purported.

[1631] Commenters stated that part of the EPA's overestimates of chromium results from the EPA's oversimplification of actual iron and steel processes and incorrect presumptions related to emissions that have driven the inaccurately high emissions estimates which underlie the EPA's risk assessment for the source category, such as:

- Assigning all slag handling and storage emissions to the slag pits—which is not representative of all slag-related emissions, as hot and buoyant sources would disperse differently than emissions from storage piles and alter risk estimates.
- Contributing sources not being attributed emissions in the EPA's modeling, such as roads located within 150 feet of the Gary North monitor, and non-slag material handling and storage piles located within 1,000 feet of the Gary North monitor.

Response 4:

The value of 0.175 µg/m³ included in the preamble was an inadvertent error and was not included in analysis of the final action level. The monitor-to-model ratio for Gary North was 28 times higher, comparing the highest average monitored concentration at Gary North from May through September of 0.1597 µg/m³ to the modeled concentration at Gary of 0.0057 µg/m³. The EPA agrees with the commenter that the comparison of the 2020 RTR modelling to the 2022 fenceline monitoring does not reflect a direct monitor to model comparison. We also agree with the commenter that results will be different if a different data set and timeframe is used, as the commenter used individual daily production rates to model emissions for a particular day. The EPA did not perform new modelling for this rulemaking and relied upon the modelling performed for the previously performed RTR. The EPA agrees that offsite near-field sources may contribute to fenceline concentrations, and as proposed are finalizing the ability for facilities to use a site-specific monitoring plan to correct for such near field sources.

Comment 5:

[1631] Commenters stated that the EPA has alleged an underestimation of fugitive emissions of Cr^{6+}. The 2022 section 114 fenceline monitoring program measured only total Cr, not Cr^{6+}. The EPA was interested in the Cr^{6+} portion because this oxidized state of chromium has the highest potential for adverse health effects. Without direct Cr^{6+} measurement data, the EPA estimated concentrations of Cr^{6+} based on the total chromium concentrations. Using a ratio of 1 percent to

18 percent, the EPA estimated the range of Cr^{6+} concentrations measured at the fenceline to be 0.0001 to 0.0315 µg/m^3, which was found to be 2 to 32 times higher than the highest concentration modeled two years earlier in 2020 as part of the RTR. The EPA attributed this difference "mainly due to an underestimation of fugitive Cr emissions in the RTR." (88 Fed. Reg. at 49,415.)

[1631] Commenters stated that this alleged "underestimation," however, is grounded in the EPA's own underlying assumption regarding the Cr^{6+} portion of the total chromium measured at the fenceline—an assumption that is overly conservative and ultimately incorrect. The EPA assumed that the Cr^{6+} portion of the total chromium concentrations was 1 percent to 18 percent. Actual data from ambient air quality monitors collected by the state of Michigan from 2007 through 2012 in Dearborn, Michigan (which was adjacent to and downwind of an II&S facility) as well as from a Detroit Air Toxics Initiative study in 2001 and 2006 both support a Cr-to-Cr^{+6} ratio of a less than 1 percent. (88 Fed. Reg. at 49,415.) In the EPA's recent reevaluation of 2012 stack test data using two different methods, the EPA removed high and low data perceived as outliers but provided no clear justification for the validity of the data that was accepted, nor did the EPA identify which specific data points it removed as outliers. Had EPA used an appropriate ratio of 0.81 percent, based on the six-year average of the Cr-to-Cr^{6+} ratio from the Dearborn monitor based on actual ambient Cr^{6+} data collected from 2007 through 2012 to calculate Cr^{6+} emissions from the monitored total chromium concentrations, then there would have been no underestimation concerns with the 2020 RTR modeling results and no implications as the basis for future monitoring requirements for "ground-truthing."

[1631] Commenters stated that as discussed in previous submittals to EPA, the Dearborn monitor (Site ID 26-163-0033), located within 250 meters of the fenceline of the Dearborn Works II&S facility in Dearborn, Michigan, has historical measurements of both hexavalent and total chromium ambient measurements. This monitor was installed as part of the Detroit Air Toxics Initiative (DATI) project conducted by the Michigan Department of Environmental Quality (DEQ) (now known as the Department of Environment, Great Lakes, and Energy (EGLE)), and monitoring was discontinued in 2013. According to data provided in the DATI report (Detroit Air Toxics Initiative: Risk Assessment Update) and data obtained from the EPA's AirData air toxics database, data from 2007 (post-implementation of the II&S NESHAP) to 2012 (the last full year of measurements) shows that the average hexavalent-to-total chromium ratio is 0.81 percent.

[1631] Commenters stated that the ratios from the Dearborn ambient monitoring data align with the sampling that was conducted for cooled/solidified slag. Testing conducted in 2019 on BF and BOF slag using analysis Method 3060A/7199 showed very low hexavalent to total chromium ratios of 1.06 percent and 0.58 percent, respectively. The slag testing results support very low hexavalent chromium to total chromium ratios even though the test method used, Method 3060A/7199, yields higher hexavalent-to-total chromium results than other available non-destructive test methods. The test resulted in hexavalent chromium below the detection limit of 2 mg/kg, resulting in a ratio of less than 0.07 percent hexavalent chromium to total chromium. Detailed information on the testing methodology and result were provided in Appendix B of the January 19, 2023 Industry submittal to the EPA.

[1631] Commenters stated that concurrent actual chromium and hexavalent chromium testing was conducted at the Gary Works facility on fourteen different materials, two unpaved roads, and one paved road. All testing, with the exception of limestone (which tested at approximately 1 part per million total chromium), demonstrated very low ratios less than 2 percent. The roadways, which are expected to contribute to the total chromium concentrations at the Gary fenceline monitors, show ratios of between 0.09 and 0.18 percent.

[1631] Commenters stated that the EPA should revise the hexavalent-to-total chromium ratio assumption used to estimate health risks to reflect concurrent, real-world measurements which demonstrate much lower ratios than the upper bound percent used by the EPA. In particular, the Dearborn ambient monitor data demonstrates that a hexavalent-to-total chromium ratio of 0.81 percent would be an appropriate ratio for risk assessments.

Response 5:

The EPA did not estimate health risks as part of this rulemaking. Revisions to the RTR are outside the scope of this rulemaking. However, we did estimate the potential range of ratio of hexavalent-to-total chromium based on: (1) the ambient monitoring data near the Dearborn facility (described by the commenter); and (2) the stack test data described in the technical memorandum titled: "Integrated Iron and Steel Risk and Technology Review: Point Source Data Summary", which is available in the docket. We estimated the range to get a better understanding of potential health impacts because hexavalent chromium is much more toxic than trivalent chromium (which is the main form of chromium in these emissions). However, we did not estimate risks because this rule is based on the technology review pursuant to CAA section 112(d)(2)/(3). This rule does not include a risk assessment or risk review pursuant to CAA section 112(f).

Comment 6:

[1627] Commenters stated that the mass of different HAP collected by the Burns Harbor monitors is highly variable. Commenters included figures depicting the daily mass of chromium and lead recorded during the Burns Harbor fenceline monitoring. The charts may look similar, but a more detailed review demonstrates substantial variability in mass reading of each metal and in the ratio of mass measured for the different metals. The readings on day one and three have relatively high lead levels compared to chromium, while readings on day 6, 25 and 27 have much higher chromium readings than lead. On several days the mass readings for lead and chromium are roughly the same.

[1627] Commenters stated that broken down by monitor, the effect of monitor location is also apparent. The EPA cannot be surprised, for example, that the Burns Harbor 3 monitor recorded low readings, given its location.

Response 6:

EPA agrees that monitor location is important, and that monitors located upwind and downwind of a potential source of emissions will have a different result.
Unlike source testing, contributions to fenceline samples are composed of many different sources, so the relative ratios of different pollutants may vary depending on the relative

proportion of a given source contributing to a particular fenceline sample. The overall concentration however will increase as a result of a given release point, allowing facilities to actually perform root cause investigations. This variability in fact could be a potent tool used by a facility in root cause investigation. We also note that it is important to have both upwind and downwind locations, in order to account for outside the facility contributions, and at facilities where there is a strongly prevailing wind direction it may be that a particular monitor location continuously reads low values. This importance is reflected in the monitor location specifications of 40 CFR 63.7792(a)(3). No changes were necessary as a result of this comment.

Comment 7:

[1631] Commenter stated that when establishing the 0.1 µg/m^3 action level for chromium, the EPA utilized the "delta-c" values in an effort to minimize the impacts from offsite contributors to the fenceline monitors. However, the delta-c value is based only on the highest and lowest chromium concentrations for each sampling event, not the predominant wind direction, and is inadequate to fully take into account all potential offsite contributors and is virtually ineffective at taking into account other onsite, non-UFIP contributors. Because the proposed method utilizes one day of sampling every six days, it is very dependent on each sampling day's wind conditions, yet the proposed delta-c calculation does not account for wind direction—at least for elimination of data for purposes of the annual average. As such, and as demonstrated in an analysis of the delta-c data from the section 114 collection testing included as an appendix to the comment, periods when the Cr concentration decreases across the site from upwind to downwind (indicating offsite contributors affecting the upwind monitor) would lead to increases in the delta-c concentration.

[1631] Commenters stated that in addition to errors in the delta-c methodology, the EPA's approach to setting the action level is flawed. The highest observed average delta-c value from the section 114 collection testing was for the Gary Works facility at 0.149 µg/m^3 (the highest of the four facilities participating in the ICR monitoring program). Because this reflects impacts from other onsite or offsite contributors and included periods when the chromium concentration decreased across the site from upwind to downwind, the Gary Works facility could implement the proposed new work practice standards and meet the proposed new opacity limits – and even reduce its fugitive emissions by an expected 20 percent – yet the delta-c value could remain above 0.1 µg/m^3. Half of the delta-c values for the Gary Works facility were over a 0.1 µg/m^3 action level. Even though the EPA attempted to set a limit that Gary Works could meet if it were complying with the proposed new opacity and work practice standards, the annual average delta-c chromium value could exceed the action level despite full compliance. Similarly, about one-third of Granite City's 24-hour delta-c values were over the action level. With a six-month average near the action level, it is possible (even likely) that offsite sources and the failure of the proposed rule to account for wind direction could contribute to the average in such a way that no reductions would be sufficient to ensure the action level is not triggered. This is especially true based on Industry's more accurate HAP emission estimates and estimated amount of HAP reductions that are attributable to compliance with the proposed opacity and work practice standards. Until the EPA establishes both a correlation between UFIP emissions and monitored chromium concentrations at the fenceline and a meaningful way to discount all non-UFIP contributors and weather factors, which otherwise lead to unnecessary triggers of the action level, the EPA should withdraw the proposed monitoring program.

[1631] Commenters stated that the EPA has no monitoring data for four of the eight affected facilities to know what chromium concentrations might be measured at their fencelines and no reason to believe that the concentrations would be less than the 0.1 µg/m^3 action level being proposed—even if the UFIP sources at those facilities were complying with all proposed opacity and work practice standards.

[1631] Commenters stated that because so many factors influence and affect fenceline concentrations, including meteorological conditions, distance between the UFIP sources and the fenceline, placement of the monitors, and potential offsite contributors, the data collected from Gary Works should not be presumed to be the best upon which to establish an action level for facilities for which the Agency has no data. Once the sampling and analytical methods are promulgated, the EPA should obtain data from these four facilities, and also from the four facilities that participated in the ICR, over a period of six to twelve months before subjecting them to an action level. This more comprehensive monitoring program would provide information needed to set an action level consistent with the promulgated sampling method and also better inform whether fenceline monitoring is an appropriate approach for addressing whether the UFIP sources are complying with the proposed opacity and work practice standards.

Response 7:

The EPA disagrees with the commenter that further changes to the regulatory text are required as a result of this comment. The rule allows for the correction of offsite near field sources such as those described by the commenter, and all onsite sources contributed to the fenceline samples used in development of the action level. A fenceline sample need not be devoid of contributions from onsite sources in order to be effective. As to the commenter's concern regarding the Gary exceeding the action level on multiple individual samples, the EPA notes that the action level is an annual average and is not based upon an individual sample. The EPA also anticipates that, as a result of the UFIP standards implemented in final rule, facilities will be able to meet the action level. Additionally, facilities have the option to use a site-specific monitoring plan to account for universal background and offsite near field sources that the commenter have indicated is a potential issue at some of these sites, thereby further reducing the probability of action level exceedances due to these factors. The EPA is finalizing the fenceline action level and standard as proposed.

4.2 Proposed standards for fenceline monitoring

Comment 1:

[1631] The EPA characterizes the fenceline monitoring program as a work practice standard which will ensure that sources take corrective action if monitored chromium levels, as a surrogate for HAP emissions from UFIP sources, exceed the proposed 0.1 µg/m^3 action level. Executive Order 12886 mandates the EPA to avoid redundant, costly regulatory requirements that provide no emission reductions. If the fenceline monitoring program is sufficient to lead to corrective actions and ensure compliance with the new opacity and other work practice standards proposed for UFIP sources, then the EPA should not also impose redundant, costly, and frequent VE testing and associated recordkeeping and reporting requirements.

Response 1:

We disagree that the fenceline monitoring standards we are finalizing in this rule are redundant to MACT emissions standards for fugitive HAP emissions sources. The MACT standards impose requirements on fugitive HAP emissions sources consistent with the requirements in CAA section 112(d)(2), (d)(3), and (h), and the fenceline monitoring requirement is not a replacement for those requirements. Rather, based on our review of these standards, we concluded that the primary CAA section 112(d)(6)-based fenceline monitoring program is a development in practices, processes or control technologies that would improve management of fugitive emissions in a cost-effective manner and help assure compliance with applicable process emission standards. Requiring sources to establish a fenceline monitoring program that identifies HAP emission sources that cause elevated pollutant concentrations at the fenceline and correcting high emissions through a more focused effort augments but does not replace the existing standards or the new UFIP standards.

Comment 2:

[1592; 1627; 1604; 1683] Commenters stated that while any fenceline monitoring requirement is an improvement, the proposed rule requires sampling just every 6th day for 24 hours. Since steel mill emissions can be episodic, monitoring can easily miss the mills' worst pollution. Commenters requested a requirement for more frequent sampling in order to give a more accurate representation of the air quality that nearby communities are actually exposed to.

[1592] Commenters stated that the fenceline monitoring component of the 2023 Proposal is based on a data set that is far too limited to support the proposed limited fenceline monitoring program. If anything, because the very small data set yielded very surprising results showing that actual concentrations of HAPs were 3, 6, and 28 times higher than modeled emissions, the data should have led the EPA to the conclusion that more comprehensive and intensive monitoring is required to protect public health. This means sampling for all HAPs metals, and at a sufficient number of locations to measure actual community exposure. The proposed rule needs to be modified to require such comprehensive and intensive fenceline monitoring for at least one year at each facility. Then, each facility's fenceline monitoring requirements should be dictated by the data collected. There should be a recognition that the data may show that more monitoring may need to be implemented to ensure protection of public health.

[1627] Commenters stated that the EPA should require continuous fenceline monitoring because, without it, the mills' worst emissions will continue to go unmonitored and the monitoring results will continue to be inaccurate and misleading. Ultimately, they will be dangerous because they will give people, including decision-makers, a false impression that fugitive emissions and fenceline concentrations are far lower than they are in reality.

Response 2:

The EPA selected a sampling frequency of 6 days to match that of the ICR and ensure that sequential samples are collected on different days of the week and that each day of the week is represented to capture daily variations in operation of the facility.

Unlike the sampling method for benzene at refineries, the potential candidate fenceline sampling methods for metals require significant infrastructure such as power at each sampling location. In addition, the cost of the currently available continuous monitors for metals is cost prohibitive for a multi-location fenceline network of the same magnitude as EPA Method 325A. There is also only a single provider for the continuous multi-metals monitors, whereas the sampling technology used in the ICR, and the basis for the standard and the potential candidate method for fenceline monitoring are readily available.

Comment 3:

[1592] Commenters stated that the proposed fenceline monitoring data would only require root cause analysis and corrective action upon triggering an action level for a single pollutant based on a 12-month average. A 12-month average is excessively long and the 2023 Proposal should be revised to a 30-day average.

[1591; 1594] The EPA should also specify a short-term acute action level in addition to a 30-day average action level. An acute action level is also needed because people in fenceline communities, and beyond, are not exposed to averages of pollution. People are exposed to pollution as it is emitted, which is often in repetitive, acute incidents that are emitted at irregular times for varying durations. Averaging data masks extremely dangerous high peaks of HAPs that people are exposed to. Severe episodic exposures can cause acute health effects, as well as be a nuisance. Short-term exposure to high concentrations of toxic pollutants can be fatal.

[1594] Commenters stated that the EPA could base a short-term action level on the Agency for Toxic Substances and Disease Registry's ("ATSDR") minimum risk level for intermediate duration exposures (15–364 days) to particulate hexavalent chromium. Assuming 18 percent of total chromium is hexavalent chromium, a short-term action level for total chromium based on this ATSDR minimum risk level would be 1.67 $\mu g/m^3$. Commenters stated that the EPA should require corrective action whenever this action level is exceeded during a period of twelve days (two sampling periods).

Response 3:

The EPA acknowledges the data analysis provided by the commenter, but disagrees that the fenceline monitoring action levels should be revised to consider short term risk. The fenceline monitoring provisions for chromium were finalized as part of this rulemaking were done so under the authority of CAA section 112(d)(6) allowing the EPA to revise standards "as necessary" without obligation to consider risk to human health. For this rulemaking it was deemed necessary to implement fenceline monitoring at the selected action levels after the data from the EPA's CAA section 114 request revealed that modeled concentrations do not accurately reflect true fenceline concentrations. This analysis (presented at 88 **FR** 49414) compared the fenceline monitoring delta c calculations (Docket ID No. EPA-HQ-OAR-2002-0083-1502) and the example facility including UFIP emission sources modelling performed during the risk and technology review (Docket ID No. EPA-HQ-OAR-2002-0083-0961) was performed independent of risk and incorporating short term risk to revise the action levels in the absence of data for the other pollutants considered would be inappropriate.

Comment 4:

[1627] Commenters stated that in addition to obtaining better information about steel mills' actual emissions, the EPA should require supplemental on-site fugitive emissions monitoring, which might involve 4 to 6 continuous multi-metal monitors and on-site meteorologic stations within a few hundred yards of the basic oxygen process furnace shops and BF casthouses, located where modeling projects the greatest concentration of fugitives for lower-level sources. As currently proposed by the EPA the data gathered by these monitors should be publicly accessible on WebFIRE. If there are upper level and other fugitive emissions that cannot be captured by these monitors they would continue to be monitored by DOCII or other visual emission techniques.

[1627] Commenters stated that for this supplemental monitoring, the purpose of which would be informational unlike emissions monitoring and fenceline monitoring, the EPA need not set a corrective action level at this time. Rather, EPA would explain that this monitoring is intended to improve the operator's ability to understand the nature and causes of fugitive emissions and to determine what (1) measures it can take to maintain compliance with enforceable opacity emissions and (2) how to implement the work practice requirements of the rule. The data from these monitors would also enhance the EPA's ability to understand and effectively regulate these complex sources in the future and would assist the EPA and the public in identifying potential violations of work practice requirements.

Response 4:

The EPA recognizes there are multiple toxic metals emitted by various facility processes from the iron and steel facilities. Based on a lack of information on fugitive lead and other metal HAP emissions, the EPA does agree with this commenter that there is a need for more data gathering, both at the fenceline and from other sources on the facilities. EPA did not propose nor are we prepared to promulgate a requirement to monitor any metals other than chromium as part of the fenceline requirement, but we intend to gather more fenceline monitoring data for lead in 2024 at Integrated Iron and Steel facilities to better characterize fugitive lead emissions. We intend to collect this data in a separate action under CAA section 114 that will follow this final rule.

Comment 5:

[1631] Commenters stated that the proposal would require II&S facilities to install at least four monitors at each affected facility to measure ambient air concentrations of chromium every six days for a period of 24 hours at a time, while recognizing that the EPA has not yet promulgated a sampling method for doing so. For the 2022 ICR, the EPA required the affected II&S facilities to use EPA's Inorganic (IO) Compendium Method IO-3.5, which provides for the collection of PM samples that are then sent to a laboratory for analysis and individual metal speciation, for the six-month section 114 collection monitoring. The current proposal under Subpart FFFFF, however, does not identify a chromium-specific ambient sampling methodology. The proposal indicates that a method will be proposed by the EPA in the future—maybe next year, in 2024—and eventually promulgated.

[1631] Commenters stated that because the proposal does not include or identify an air quality sampling method for the fenceline monitoring program, the proposal could not justify an appropriate number of monitors, the sampling frequency, the sampling duration, or appropriate action level. Industry has no way to judge the accuracy of ambient air quality monitoring of

chromium emissions already completed or the cost and other regulatory burdens of maintaining an ambient monitoring network as proposed, including whether the sampling method ultimately promulgated would be consistent and compatible with the fenceline data already collected, the required number of monitors, and the frequency and duration of the required sampling being established in this rulemaking. Without a proposed sampling method, commenters lacked essential information needed to properly comment on this proposal. The EPA should therefore not finalize the proposed fenceline monitoring requirements until (1) a sampling method is promulgated by EPA with notice and an opportunity to comment and (2) the EPA provides an explanation and justification for the number of monitors and the frequency and duration of the sampling requirements in light of the promulgated sampling method. Otherwise, the EPA must reopen the fenceline monitoring program rules during the promulgation of the sampling method to allow commenters to address these issues.

[1631] Commenters stated that the EPA is proposing an action level of 0.1 $\mu g/m^3$ and a sunset level of 0.05 $\mu g/m^3$ as part of the fenceline monitoring program. Because the action and sunset levels are based on data gathered using the sampling method required during the section 114 collection temporary fenceline monitoring program, and because the EPA has not promulgated or even proposed the sampling method required for the Subpart FFFFF fenceline monitoring program, commenters were not able to assess the appropriateness of the action or sunset levels. Certainly, if the promulgated sampling method is different than the sampling method used during the ICR fenceline monitoring program, the proposed action and sunset levels would be inappropriate. As proposed, commenters were deprived of the opportunity to meaningfully comment on the action and sunset levels, other than simply to oppose them. The EPA should therefore either withdraw the proposed action and sunset levels until such time as it proposes the Subpart FFFFF fenceline monitoring program sampling method or reopen the comment period on the action and sunset levels to provide commenters with an appropriate opportunity to assess and comment on those levels in light of the proposed sampling method.

[1631] Commenters stated that data collected at the same location over the same time period using different methods provides inconsistent results, as evidenced by the ambient monitoring data collected by the Cleveland-Cliffs Cleveland Works facility. This facility used both TSP-based and PM_{10}-based monitors to determine chromium concentrations at its fenceline. When using the high-volume TSP method, the average chromium concentrations across four monitors were 3.7 times higher than the average chromium concentration across four monitors when using the high-volume PM_{10} method.

[1631] Commenters noted that the proposal provides that the fenceline monitors would need to be operational within a year after the EPA's promulgation of the fenceline method or within two years after this rulemaking becomes final if the EPA promulgates the fenceline method earlier than a year after this rulemaking becomes final. If the Agency were to move forward with this current rulemaking and to finalize the fenceline monitoring requirements without identifying the sampling or measurement method, however, the affected industry is not provided with needed information regarding the accuracy and burden of the yet-to-be-identified method and is therefore deprived of an appropriate, sufficient, and meaningful opportunity to comment. The fenceline monitoring proposal is thus premature and should not move forward unless and until

the EPA proposes and finalizes the sampling or measurement method for determining ambient air concentrations of chromium, subject to prior notice and an opportunity to comment.

[1631] Commenters stated that otherwise, because the method and the monitoring program are inextricably linked, once the EPA proposes the new sampling method, the EPA must provide an opportunity to comment on not only the proposed method itself but also all implications for the entirety of the chromium fenceline monitoring program that the EPA has proposed and intends to finalize before the end of this year. The reopening of the fenceline monitoring program rules when the sampling method is proposed for promulgation is critical for ensuring that the sampling method does not change the outcome of this current rulemaking. The EPA simply cannot impose a requirement in the future that could materially affect this current rulemaking without reopening and providing an opportunity for the affected industry to comment on the issues that the EPA purports to resolve and put to rest here.

Response 5:

The EPA notes that the commenter will have an opportunity to comment on the fenceline method when it is proposed, as it will require notice and comment rulemaking to promulgate the method as well as to cite it in the subpart. As we stipulated the number of monitors, the frequency and duration of sampling in the rule, this would not change with the promulgation of the method. Changes to the frequency or duration from those being promulgated here would require a further notice and comment rulemaking. The EPA agrees with the commenter that, when a significant fraction of the particulate matter is screened from the sample (for example not including PM>10) the values of the metals will change as well. The EPA recognizes the concerns the commenter has with the implementation timeline, however, the method will be subject to notice and comment rulemaking, providing ample time for industry to comment on the methodology. The EPA recognizes the commenter's desire for the fenceline monitoring provisions of the rule to be reopened when the fenceline method is proposed. The EPA intends to update the regulatory text at 40 CFR 63.7792(a) to insert the name of the method as well as actual date sampling is to be started. If other changes to the subpart are required as a result of the fenceline monitoring method, those portions of the rule would be amended in the notice and comment rulemaking.

Comment 6:

[1594] Commenters encouraged the EPA to propose a fenceline metals method by the end of 2023 and finalize the method in early 2024. The EPA should also require that sources comply with the fenceline monitoring requirements within six months of promulgation of the final rule, ensuring that the fenceline method is also finalized. The EPA has treated the II&S facilities differently where they are proposing a fenceline standard without an approved method. In the 2015 Refinery Rule, Method 325 A and B was developed, as is also the case with the currently proposed revisions to the NESHAP for coke ovens. For the fenceline monitoring standard for HON, SOCMI, and P&R I and II, the EPA included Method 325 A and B for passive samplers and Method 327 for canister samplers. The EPA has provided no reasons for not including a metals method. Commenters stated that accordingly, the EPA has acted arbitrarily and capriciously by failing to finalize and include a metals method with the proposed fenceline standard for II&S facilities. The EPA can remedy this failure by proposing a metals method posthaste to keep II&S facilities on track to begin monitoring sooner.

Response 6:

EPA acknowledges the comment and can assure the commenter that we will work as expeditiously as possible to propose a new metals fenceline method. As part of EPA CAA section 114 effort, we relied on a common ambient monitoring method[6] for the collection of the metals samples and associated analytical method[7] for multi-metals for the analysis. While these methods are robust and appropriate for ambient trends applications, EPA would need to further investigate and revise these approaches for a stationary source regulatory program to ensure improved precision and accuracy in the method, in the same manner EPA developed Method 327[8] from TO-15 in the recent HON rulemaking.

To reduce burden, while maintaining or improving the quality of the data, EPA is evaluating alternative approaches/methods for metals sampling at the fenceline and when the EPA can validate these method(s) we will move forward with notice and comment rulemaking to formally propose their use In advance of this, facilities may choose to move forward with voluntary monitoring using the legacy ambient approaches used in the CAA section 114 or through on-line methods, such as Other Test Method 31[9]to understand their fenceline metals concentrations.

The EPA is finalizing the rule as written and will propose the fenceline sampling method in a notice and comment rulemaking as expeditiously as practical.

Comment 7:

[1594] Commenters stated that as part of the fenceline standard, the EPA is allowing II&S facilities develop a site-specific monitoring plan that must be approved by EPA. The proposed regulatory text also more specifically allows an operator to "request approval from the Administrator for a site-specific monitoring plan to account for offsite upwind sources."

[1594] Commenters stated that in September of this year, the EPA's Office of Inspector General ("OIG") conducted an audit of the oversight of the benzene fenceline monitoring requirements for refineries. OIG found that "[o]versight by the EPA and delegated authorities has not ensured that all refineries that exceed the action level reduce their benzene concentrations at their fencelines." (EPA, Report No. 23-P-0030).

[1594] Commenters stated that the EPA should be setting baseline requirements for the fenceline standard, not facility-specific options that neither they nor state and local agencies have the time to review. The EPA is framing the fenceline standard as monitoring to ensure the work practices and opacity limits are achieving the anticipated reductions. Accordingly, to meet the MACT standards, the EPA needs to prescribe how sources will fulfill the fenceline monitoring requirements. Where the OIG Audit has already noted the EPA's failure to adequately review site-specific monitoring plans for the refinery sector whose fenceline standard has been in place for a number of years, it is unlikely that the EPA or state and local agencies can add to their workload scrutinizing site-specific monitoring plans for yet another source category.

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[6] Reference Method for the Determination of Suspended Particulates in the Atmosphere (High Volume Method), 40 CFR 50, Appendix B.

[7] Method IO-3, Determination of Metals in Ambient Particulate Matter Using Inductively Coupled Plasma (ICP) Spectroscopy

[8] Docket ID EPA-HQ-OAR-2022-0730-0061

[9] https://www.epa.gov/sites/default/files/2020-08/documents/otm31.pdf

[1594] Commenters stated that even if the EPA insists on maintaining the option to create site-specific monitoring plans, the EPA should revise the proposed regulatory text in section 63.7792 to be clearer. Commenters stated that the EPA could revise section 63.7792(f)(ii) in the proposed regulations as follows: "identify the location of the additional monitoring stations that must be used to determine the uniform background concentration and the near-field source concentration contribution. Modeling may not be used in lieu of monitoring to identify near-field sources that a site specific monitoring plan (SSMP) applicant alleges contribute significantly to fenceline chromium levels at the applicant's facility."

[1594] Commenters stated that the EPA should revise the requirements for preparing and submitting a site-specific monitoring plan to require that II&S facilities must identify whether they own or operate the near-field source. The EPA could add under the current (i) subpart a requirement for "Disclosure of whether owner or operator owns or operates the identified near-field source or sources" under (f)(1) of the proposed regulatory text.

[1562] Commenters requested that the provisions of the site-specific monitoring plan be incorporated into the Title V permit.

Response 7:

The EPA acknowledges the commenter's reference to the findings of the OIG. For proposal, the EPA revised the language used at refineries to address the findings of the OIG regarding the refinery fenceline program and is maintaining the site-specific monitoring plan in the final rule. The EPA has further revised the proposed language at 40 CFR 63.7792(e) to ensure sufficient information is incorporated in the corrective action plan to ensure that emissions are reduced to the action level. The EPA agrees with the commenter that the proposed language at 40 CFR 63.7792(f)(1)(ii) should be clarified and has incorporated language to further clarify that modelling may not be used in the identification of near-field sources or uniform background concentration. The site-specific monitoring plans are required when using near field source correction, as these circumstances are wholly dictated by each particular site and the near neighbors. The ability to account for the contribution of neighboring facilities is crucial to the process of corrective action, and the use of pro-active measures to reduce the number of spurious exceedances due to near-field sources and not due to activities within the facility is critical to managing the resources of the facility to account for true exceedance of the action level. The EPA disagrees with the commenter that additional language is necessary to require the identification of the owner of a near field source in the site-specific monitoring plan. The site-specific monitoring plan requires an identification of the near field sources that are contributing to the concentration at the monitor for which the facility is requesting correction, and part of the identification of the near field source is the owner/operator of the near field source. For major sources, contiguous facilities owned by the same owner or operator are considered the same plant site.

Comment 8:

[1594] Commenters stated that because chromium, specifically hexavalent chromium, has acute and chronic inhalation effects, exceeding the action level will have short- and long-term effects

on human health. Accordingly, the EPA should shorten the timeframe in which operators must implement corrective action: 45 days is entirely too long. Commenters suggested that the EPA require corrective action be performed within five days of discovering the root cause. The EPA should further require that root cause analysis and corrective action be completed within 15 days after determining there is an exceedance of the action level.

Response 8:

The finalized requirement to allow 45 days to complete both the root cause analysis and initial corrective action encourages facilities to diagnose the cause of the exceedance quickly so they might plan when the initial corrective action would be most appropriate or safest to implement. Shortening the corrective action timeframe would potentially pressure owners and operators into performing corrective action during unsafe process periods or provide inadequate timeframes for owners and operators to secure resources needed to conduct the corrective action. The finalized 45-day window provides ample room for facilities to avoid these situations.

In addition, 45 days are allowed to complete the root cause analysis and initial corrective action due to the difficult nature of diagnosing fugitive emission sources. Fugitive emissions may be intermittent depending on the process, and the initial 30-day diagnostic window allows an appropriate amount of time for a facility to consider possible sources before being required to transition to more time resolved sampling techniques or place additional monitors.

Comment 9:

[1631] Commenters stated that the proposal requires a root cause analysis when an annual average value exceeds the action level of 0.1 $\mu g/m^3$. A root cause analysis will be very difficult if not impossible to complete with any certainty. For one reason, the annual average delta-c value will reflect chromium emissions from onsite point sources, onsite non-UFIP fugitive sources, and a wide variety of offsite contributors in addition to the seven different types of onsite UFIP sources. These highly variable emissions from numerous sources will be reflected in 240 different chromium concentrations collected (60 days of measurements at a minimum of four locations) at the facility fenceline over the period of a year. Because of the number of onsite and offsite contributors of chromium at intermittent and variable rates, the large number of samples to be taken over the course of a year, and the delay that would occur between any incident where opacity or work practices standards were not being met and the root cause analysis commencing, the analysis cannot reasonably identify the root cause of the exceedance nor even which operations or emissions might have contributed to the exceedance. It is impractical to expect a root cause analysis to be successful given these factors, especially given the lack of any correlation between UFIP emissions and compliance with opacity and work practice standards.

[1631] Commenters stated that without an established correlation between chromium concentrations and UFIP emissions and the numerous possible onsite and offsite contributors to the chromium concentrations, it is unclear how a root cause could ever possibly be established. For example, when the wind points in the direction of a particular UFIP source, it may also point to other UFIP sources that are in that direction—with no way to distinguish among them to determine which one might have had a spike in emissions. There could also be roadways or other activities nearby—and these other sources could be the cause of or contribute to the spike in

chromium. Another concern with not being able to identify the root cause is the short duration and intermittent nature of UFIP events. It will therefore be difficult to determine if a very short-term event, which may never be repeated, caused a spike in a 24-hour chromium monitored concentration. Additionally, any root cause analysis would include an analysis of weather conditions to identify the general wind direction on the day of the occurrence and potential for offsite contributors leading to the increased chromium concentration. In the Gary Works section 114 collection data, the average delta-c increased even when the highest concentration was observed at the upwind monitor. When this is the case, there is no increase in monitored chromium concentrations across the facility, from upwind to downwind, but rather a decrease. This example demonstrates the lack of a correlation between monitored chromium concentrations and UFIP emissions and the ineffectiveness of the proposed fenceline monitoring program.

[1631] Commenters stated that, while not intended to be exhaustive, the following list identifies potential offsite contributors to fenceline chromium concentrations.

- Gary Works: a densely industrial region, which includes TMS Gary Works (located within Gary Works and regulated under a separate air permit), Cleveland Cliffs Indiana Harbor (7 miles away), Cleveland Cliffs Burns Harbor (12 miles away), NLMK facility (10 miles away), high-traffic roadways (gasoline is a source of Cr), and marine vessels and trains using diesel-fired boilers and engines (diesel is a source of Cr). A breakdown of the Toxic Release Inventory (TRI) reported levels is included below in Table VIII.3.
- Granite City: Mid-Continent Coal & Coke Company, Lapham-Hickey Steel, Allied Crawford Steel, Granite City Slag, Omaha Track (utilizing coal tar and petroleum, both sources of Cr), and SunCoke Energy.
- Cleveland Works: “Industrial Valley,” Zaclon LLC, high-traffic roadways, Howmet Aerospace (formerly Arconic Inc. and Alcoa), McGean Chemical Company, and Charter Steel.
- Burns Harbor: Bailly Generating Station (not operating but under remediation with fugitive chromium from those activities), NLMK Indiana facility, Mid-Continent Coal and Coke Company, Metro Ports, Carmeuse Lime and Stone, marine vessels.

[1631] Commenters stated that in addition to offsite contributions, the unique geography of each facility can also lead to a “clean” sampling location where atmospheric conditions, such as those near the Great Lakes, lead to lower chromium measurements than the linear assumptions on which the delta-c action level is based. This linear assumption is that the facility’s lowest contribution value represents ambient conditions, and the delta-c, the difference between the highest and lowest monitoring locations, represents the facility’s contribution. In the 2022 section 114 collection results, multiple facilities had sampling periods during which the lowest measured concentration was near zero while the others had significant oscillation. If each sampling period had one consistently low concentration location and one high concentration location, the underlying assumptions of the delta-c calculation would be plausible. However, the section 114 collection data indicates that offsite contributions may affect multiple, but not all, sampling locations, leading to artificially high delta-c values because the offsite contributions did not affect both the highest and lowest concentrations and because the highest concentration was often observed at the upwind monitor, showing a decrease in chromium concentrations across the site from upwind to downwind.

[1631] Commenters stated that because triggering an action level is not necessarily the result of emissions from the affected UFIP sources that the EPA intends to address through the fenceline monitoring program, the EPA should not require corrective actions, expensive onsite, real-time monitors, or labor-intensive, long, drawn-out investigations that in all likelihood will not identify the root cause to be a particular UFIP's noncompliance. Commenters stated that given these deficiencies that will prevent the fenceline monitoring program from achieving its purpose, the EPA should withdraw the proposal.

Response 9:

The EPA disagrees with commenters' assertion that it will be difficult to complete root cause analysis with any certainty. While the overall system has acquired 240 individual measurements, only 2 are used in each sampling period to determine the delta c (120 total measurements). Further, the availability of wind speed and direction from the meteorological data required by the rule aids the facility in determining the direction of the contributors to the fenceline concentration. The annual average is updated with each sampling period, so unless a facility has continuously exceeded the action level, the most recent sample period is de facto above the action level and would be a good starting point for a root cause investigation. There may be additional sample periods exceeding the action level, and those periods would also be a good place to investigate. Regarding onsite and offsite contributions, as the EPA noted in the regulatory text, a facility has the discretion to use any method to determine the root cause of the exceedance of the action level, visible emissions or process knowledge for example. For other data sources, such as weather, the EPA in no way precludes the use of further analysis of such data in the root cause investigation. In the example of offsite contributions, as the commenter describes upwind at the Gary facility, this is a key reason that site-specific monitoring plans are allowed, to proactively reduce the number of exceedances due to potential offsite near field sources. The EPA additionally agrees that the mentioned list of potential offsite contributors is valid and, similar to the refineries which share fenceline with other facilities, a site-specific monitoring plan may be helpful to account for offsite contributions. The EPA does not require corrective action for offsite contributions, nor did we propose real-time monitors. The EPA is finalizing as proposed (except as noted elsewhere).

Comment 10:

[1631] Commenters stated that the proposal would require facilities to use real-time continuous multi-metal monitors to locate the cause of the exceedance of an action level nearly three months after monitored data is used to establish an annual average. The continuous x-ray fluorescence monitor technology that could work in this situation is very expensive—at least $180,000 per monitor. (Quotation provided by Cooper Environmental.) Industry knows of no other real-time multi-metal monitors that would be available for rent or purchase for this purpose. Even if such a monitor were available, the additional effort would consume many hours of personnel time with little expectation of pinpointing the source of elevated UFIP PM emissions, which are typically short, irregular, and intermittent. Because the EPA has not demonstrated how a continuous, real-time monitor would help identify any sources of elevated fugitive HAP emissions and how those emissions correlate to ambient chromium concentrations at the fenceline, the EPA should withdraw the proposed requirements for continuous real-time multi-metal monitors, especially

when fugitive particulate matter and HAP emissions from UFIP sources are visible and compliance can be demonstrated through Method 22 and Method 9 VE observations.

Response 10:

The EPA disagrees with the commenter that the proposal requires the use of real time multi-metal continuous monitoring to locate the cause to locate the cause of an exceedance. The reference to real time monitors at 40 CFR 63.7792(d)(3)(B) is an example of potential more time resolute monitoring that may be used by the facility, as indicated by the use of *exempli gratia* (*e.g.*) rather than *id est* (*i.e.*). The EPA acknowledges the potential ambiguity due to the non-parenthetical reference to real-time monitoring and has amended the regulatory text for the final rule to reflect more time resolute monitoring rather than real-time monitoring.

Comment 11:

[1631] Commenters stated that the 2023 Proposal would require that facilities install additional monitors or conduct ambient sampling on a more frequent basis than every six days if they are not able to determine a root cause through a visual inspection or operator knowledge. While the facilities would have additional data reflecting ambient concentrations of chromium either from monitoring at more locations or on a more frequent basis, EPA has failed to provide any explanation as to what "additional data" would be collected and for what purpose, and how it would inform a root cause analysis of elevated chromium concentrations—especially from intermittent, infrequent, and very short-duration fugitive UFIP emissions. Because the EPA has failed to support its position and without a demonstrated nexus between the additional data and a root cause analysis, it should not impose the additional monitoring requirements.

Response 11:

The EPA disagrees with the interpretation of the commenter. The facility, according to 40 CFR 63.7792(d)(2), may use visible emissions or process knowledge, but is not limited to or required to use these techniques to investigate the root cause. In the event that the facility has not identified the root cause of the exceedance within thirty days after it has been determined the action level has been exceeded, then it is required that the facility employ more time resolute monitoring (*e.g.*, shorter sampling periods, real time monitors). The EPA recognizes that a shorter time period of sampling will still require analysis of the sample, and the 72-hour period for moving monitors does not make sense in this context, and has revised the reference to 72 hours to 28 days to allow time for analysis of any samples acquired.

Comment 12:

[1631] Commenters were concerned that the EPA may claim some type of violation if a root cause could not be established, and expect that this will often be the case. As long as a facility's delta-c annual average is below the action level, no further action should be needed, including no corrective action plan or possibility of an alleged violation. Also, if the action level is still being triggered, and a facility is able to demonstrate with reasonable certainty that its UFIP sources are all in compliance with the new opacity and work practice standards, no further action should be needed, including no corrective action plan or possibility of an alleged violation. Lastly, if the action level is still being triggered and a facility is able to demonstrate with reasonable certainty that its UFIP sources are not the cause of the action level being triggered (e.g., an offsite

contributor or onsite non-UFIP contributor (or a combination of non-UFIP contributors) is the cause, which could be based on wind direction alone), then no further action should be needed, including no corrective action plan and no possibility of an alleged violation. In light of the recent EPA Inspector General Report regarding increased enforcement actions based on fenceline monitoring program data, commenters have become more concerned about this and requested that the EPA make these clarifications directly in the rule language.

Response 12:

The EPA disagrees in part with the commenter. The root cause investigation is a result of an exceedance of the action level. The purpose of the root cause investigation is to find and correct, as applicable, the issues causing the exceedance as well as attempt to prevent further exceedance from that cause (see 40 CFR 63.7792(d)(4), inadvertently labelled 40 CFR 63.7792(d)(2) in the proposed redline). The exceedance of the action level does not necessarily need to be caused by a UFIP source to necessitate corrective action, as noted in the response to section 4 comment 2. The action level was developed using all contributing sources of emissions at the facility, and not just UFIP sources. If the root cause investigation for example linked emissions to the blast furnace for example, and the exceedance was caused by improper operation and an exceedance of the emission limits, then corrective action may be necessary to bring that source into compliance with its emission limits. If an offsite source is the cause of an exceedance however, corrective action is not necessary, though a facility may wish to implement a site specific monitoring plan to account for said source in order to limit the number of future action level exceedances and reduce the number of corresponding root cause investigations. This relationship is clearly stated at 40 CFR 63.7792(d)(4) (inadvertently labelled 40 CFR 63.7792(d)(2) in the proposed redline). The EPA disagrees that the regulatory text needs to change as a result of these comments, as the site-specific monitoring plan explicitly allows the correction for off-site impacts to the measured fenceline concentrations. Further, at 40 CFR 633.7792(d)(4), the proposed regulatory text states, "[i]f the underlying primary and other contributing causes of the exceedance are deemed to be under the control of the owner or operator, the owner or operator must take appropriate corrective action as expeditiously as possible to bring annual average fenceline concentrations back below the action level(s) set forth in (c)(2)(3)." Clearly, off-site sources do not meet this definition and the EPA is finalizing the regulatory text as proposed.

Comment 13:

[1594] Commenters stated that some of the refineries subject to that fenceline standard have also shown little improvement. For example, Total Petrochemicals (Port Arthur, TX) and the Chalmette Refinery (outside New Orleans, LA) have exceeded the benzene action level for each of the four calendar years, while monitoring results in recent years for the Lyondell (Houston, TX) refinery and Citgo Corpus Christi West (TX) refinery show that fenceline benzene levels are increasing and exceeded the action level in 2022. (EPA, Benzene Fenceline Monitoring Dashboard.) Accordingly, the repeated failure of some refineries to stay below the action level demonstrates the need for something more than root cause and correct requirements to motivate all sources covered by the fenceline standard to decrease their emissions.

[1594] Commenters recommended that the EPA establish that the failure to keep the 12-month rolling average fenceline concentration of chromium or lead (adjusted to exclude background sources) below the action level is a violation of the CAA. To allow a reasonable time for

corrective action, the standard could establish that, once the annual action level has been exceeded, facilities will be expected to bring the 12-month rolling average below that threshold within a year. This should be required in addition to, not separate from II&S facilities' obligation to perform root cause evaluations and corrective actions. Commenters stated that if the EPA establishes a short-term action level as proposed by the commenters, the EPA should also be clear that consistent violation of this action level also constitutes a serious violation of the CAA. II&S sources, like other industrial sources, are strictly liable under the CAA, and ultimately are responsible for keeping their HAP emissions low enough to avoid triggering fenceline action levels.

Response 13:

The EPA disagrees with making exceedances of fenceline monitoring action levels violations. Fenceline monitoring is intended to limit fugitive emissions which are, by nature, difficult to capture and quantify. In many cases, malfunctions or other emission events can be significant sources of fugitive emissions. However, these events are already under strict reporting requirements, and are reported in the semiannual compliance report (submitted via CEDRI and subsequently available on WebFIRE). If a release event were then to subsequently trigger fenceline concentrations to exceed the action levels and that was redefined as a violation, the facility could be punished twice for the same event, which is unreasonable.

We disagree with the commenter's request to set short-term corrective action levels. Large emissions spikes are unique to the facility, process, and location in terms of both the volume of emissions developed and the potential risk they pose to a community. As a result, we maintain that setting standards on a facility basis is not reasonable as each facility and each release event will have a different risk profile associated with it.

4.2.1 Installing air monitors

Comment 1:

[1627; 1594; 1562; 1683; 1592] Commenters stated that the EPA did not provide any justification for requiring the same number of monitors (four) for each facility, regardless of facility size. Therefore, this requirement is arbitrary and unsupported. Furthermore, given facilities' long perimeters (e.g., U.S. Steel's Gary Works has an estimated perimeter length of approximately 80,000 ft (15 miles)) and relatively short sampling periods (24 hours), it is likely a monitor network with only four monitors would miss the highest fenceline concentration of the HAPs of interest. Consequently, the fenceline monitoring standard for II&S facilities should adopt a similar approach to EPA Method 325A, which has been incorporated or is being incorporated into fenceline standards for several NESHAP source categories, and scale the number of monitors to a facility's perimeter length or area.

Response 1:

Unlike EPA Method 325A, which uses passive samplers, the methodology used for both the CAA section 114 request and the potential candidate method for this rule requires power at each sampling location, dramatically increasing the potential cost of each monitoring site. As a result, implementing the number of sample locations required by EPA Method 325A as suggested by

the commenter would be cost prohibitive. We are also maintaining the same basis as the derivation of the action level, which was 4 monitors surrounding each site. The EPA is finalizing the fenceline monitoring sampling locations as proposed.

Comment 2:

[1627] Commenters stated that many of the fenceline monitors for steel mills were placed in locations so far from the source that the fugitive emissions would be unlikely to reach the monitors except in perfect wind conditions, and even then would be deleted by the time they reached them. Given that emissions were monitored only for 24 hours at a time once every six days, the reliance of this system on wind blowing from the exact right direction and carrying the pollution to a monitor located as much as 4 miles away is irrational and arbitrary. The EPA should require monitors to be located at fenceline locations in close proximity to fugitive emission sources, not locations chosen at far distances from those sources.

Response 2:

The EPA disagrees with the commenter that requiring the fenceline monitors to be located within the process area is necessary. The provisions of 40 CFR 63.7792(a)(3) dictate the siting of the monitoring locations, with the first criteria being sited downwind in the prevailing wind direction as this is the location where emission would primarily be directed. Other monitoring, such as opacity monitoring of the fugitive emissions sources takes place within the process area and at the source of emissions. The EPA is not making any changes to the regulatory text as a result of this comment.

Comment 3:

[1627] Commenters stated that the height and location of the fenceline monitors relative to the sources of fugitive emissions is flawed. In the proposed rule for copper smelters, published just one week earlier, the EPA rejected fenceline monitoring because fugitive emissions from the smelters' rooflines would simply pass over fenceline monitors at ground level. The EPA specifically stated fenceline monitoring was not required "because the main emissions of interest for this source category are process fugitive emissions that are released from roofline vents that are at about 100 feet elevation (i.e., not "ground level" like the source categories where we have required or proposed fenceline monitoring)." (88 Fed. Reg. at 47,425.) The EPA further claimed that, "[d]ue to the elevation of the fugitive release points, the emissions would pass over the fenceline monitors and would not be effectively measured." *Id.*

[1627; 1604] Commenters stated that fugitive emissions from steel mills – or at least the lion's share of these emissions – present the same problem. Emissions, especially those from roof vents, come out at elevations far higher than the ground-level fenceline monitors the EPA required, yet the EPA relies on fenceline monitoring to declare that fenceline lead concentrations are below NAAQS levels. The EPA should require fenceline monitors to be place on structures that are the same height as the emission sources, including the important roofline sources. Commenters stated that the EPA's reliance on ground level monitors when the Agency knows they are ineffective to measure emissions from roofline vents and other fugitive emission sources is arbitrary.

Response 3:

The EPA evaluates the appropriateness of fenceline monitoring based upon impacts at the fenceline, not necessarily the elevation of the emission point. In this source category, as noted by the commenter, there is a large distance between the elevated fugitive sources and the fenceline which differs from the relatively close distance between the roofline sources and the fenceline at the operating copper smelter. This distance also complicates an establishment of exactly what height the commenter proposes for the monitors, as if the fenceline location is located far from the emission point, the height of the roofline would no longer meet the commenters desired result as at this point the elevation of the actual emissions may be ground level. Additionally, the EPA have no data upon what the action level should be at a variable height above the ground and variable distances from the elevated portion of the fugitive sources. The National Ambient Air Quality Standards are evaluated at ground level, and not at an elevation at which people cannot be. As such, for lead, the EPA compared a ground level measurement to the NAAQS standard, as is appropriate, though a fenceline monitor, as it is within the plant boundary, does not constitute an ambient air monitor. The EPA notes that, in addition to the long distances to the fenceline, some fugitive sources are at ground level, such as slag handing process and beaching. The EPA is making no changes to the fenceline monitoring provisions as a result of this comment. As noted in the response to previous comments, many of the fugitive sources are at ground level (*e.g.*, beaching, slag handling, ground level openings on the casthouse and BOPF shop). Further, as shown by the CAA section 114 information collection request sampling, significant levels of chromium were detected in the fenceline samples.

Comment 4:

[1627] Commenters stated that the EPA's proposed section 63.7792 provides:
"(5) The owner or operator must follow the procedures in of the fenceline metals test method to determine the detection limit of the target analyte(s) and requirements for quality assurance samples." [language error in the original]

[1627] Commenters stated that a word search of the proposed regulatory text identifies 3 uses of the term "fenceline metals." Each of those uses appears to reference a separate test method, but does not provide a specific reference. A Google search for "EPA fenceline test method" did identify 40 CFR 63.658, which sets out a protocol for fenceline monitoring of benzene. The EPA's proposal locates four "fenceline" monitors as follows:
To determine sampling locations, measure the length of the monitoring perimeter. Then locate the point downwind of the prevailing wind direction and finally divide the monitoring perimeter equally into 4 evenly spaced sampling points, with one located "downwind of the prevailing direction."

[1627] Commenters stated that II&S facilities are quite large and so there are many points on the leeward side of any given wind direction. The relevant question is "downwind of what?" Commenters included a map of the U.S. Steel Gary facility which covers over 3,000 acres and several distinct sets of emission points, which may be up to four miles from a downwind monitor, depending on the wind direction at the time.

[1627] Commenters stated that while the Met sources employed in the monitoring of U.S. Steel

Gary are reasonably close, the EPA allows the source to use onsite meteorology or a National Weather Service Meteorologic (NWS Met) Station within 25 miles of the source. The facility is likely in or near a waterbody and may have substantially different conditions than a NWS Met station 25 miles away. Further, local transport will likely be substantially affected by building downwash. Moreover, given the size of these facilities, the point of maximum impact may not be directly downwind (based on long term average wind direction) of the emission points, but may occur if other directions are closer to the fenceline. Thus, for example, at U.S. Steel Gary, the fenceline is further from the sources during Easterly or Westerly winds than when the wind is from the North or South. Commenters questioned the reason behind the Met data respecting temperature, pressure and windspeed. Note that when the wind is from either the northeast, southeast, northwest or southwest there is effectively no monitoring. Note also that the monitor height is 0.5m to 1.5 m above the ground.

[1627] Commenters stated that the EPA intends sources to establish one monitoring station at the "point downwind of the prevailing wind direction" and three additional monitoring stations, each of which is 25 percent of the perimeter of the "facility property boundary. At U.S. Steel Gary and Burns Harbor two and perhaps all three of the other monitoring stations would be located on or near the shores of Lake Michigan. Some HAP emissions monitored by the Western monitor might be attributed to Gary/Chicago International Airport, International Steel Corp, ACME Coil Processors, U.S. Steel contractor facilities or I-90 vehicle traffic. However, if there were periods during sample collection when the wind was from other directions than the nominal "prevailing wind direction", it is reasonable to assume that the lowest monitor reading is not true "background." The EPA's proposed procedure assumes, without consideration of the met data for that time period that the low reading is background and that the operator is only responsible for the difference between the highest and lowest reading monitors. Commenters stated that the EPA should allow for correction of the highest fenceline reading only when simultaneous met data demonstrates that another monitor has been upwind of the facility for the entire monitoring period.

Response 4:

The commenters search for the actual fenceline method was unsuccessful because, as noted in the preamble and 40 CFR 63.7792(a), the fenceline monitoring method for metals has not yet been proposed or promulgated. Accordingly, only the reference to fenceline metals in included in the proposed or final rule. We have corrected in the final rule the inadvertent inclusion of "of" in the regulatory text at 40 CFR 63.7792(a)(5).

As the sampling methodology differs between EPA Method 325A and the potential candidate fenceline monitoring method for chomium, the sampling location requirements are also different. While EPA Method 325A are passive samplers requiring no electrical power, the samplers for metals require electrical power to be installed at each sampling location.

Wind changes and shifts may happen multiple times over the course of even an hour – the EPA is not adding the additional requirement for simultaneous meteorological data to demonstrate that a monitor has been upwind the entirety of the sample period as a requirement for calculating the delta c.

The EPA is making no changes to the final rule as a result of this comment.

4.2.2 Proposed action level for fenceline chromium emissions

Comment 1:

[1631] Commenters stated that the EPA has proposed an annual average delta-c chromium concentration “action level” of 0.1 μg/m^3 based on a scaling of the highest six-month delta-c average level across all sixteen monitors at the four II&S facilities that installed fenceline monitors under the 2022 ICR program. The EPA stated in the preamble that the highest annual average delta-c chromium concentration was 0.154 µg/m^3 based on data from the monitors at the Gary Works facility. Based on the delta-c data that the EPA posted on the Agency’s website in mid-September, the EPA apparently analyzed only the first four months’ worth of data to set the action level. Commenters’ analysis of the data reflects a different value based on a full six months’ worth of data. The delta-c chromium concentration for Gary using the full six months’ worth of data is 0.149 µg/m^3. Using the value of 0.154 µg/m^3, the EPA then reduced that delta-c concentration value by 20 percent and rounded down to 0.1 µg/m^3. Commenters noted that the result would be the same if the six-month average high value of 0.149 µg/m^3 is used.

[1631] Commenters stated that the EPA reduced the delta-c value by 20 percent based on the assumption that if Gary Works were to comply with the new opacity limits and work practice standards being proposed, its fugitive PM emissions would be reduced by 20 percent, and therefore its HAP and chromium emissions would similarly be reduced by 20 percent. The EPA has assumed that there is a linear and consistent relationship between six-month or annual average delta-c chromium concentrations and UFIP emissions (PM, HAP metals, and Cr). The EPA has not, however, demonstrated this or any other relationship between UFIP fugitive emissions and monitored concentrations of chromium at the fenceline, nor has the EPA demonstrated what PM, HAP, or chromium emissions might be reduced from UFIP sources if the proposed opacity limits and work practice standards are being achieved. In fact, this relationship does not exist. The monitored chromium concentration at the fenceline is a function of several variables beyond the magnitude of fugitive emissions from UFIP or any other sources, including meteorological conditions, the location of onsite emission sources in relation to the monitor locations, emission release parameters, and the proximity and impact of offsite sources of chromium. There is no way to accurately predict whether the proposed action level is appropriate for the facilities that were not required to collect ambient monitoring data as part of the ICR. Without a demonstrated nexus between UFIP sources’ emissions and fenceline chromium concentrations and a demonstrated impact on chromium emissions at the fenceline when opacity limits and work practice standards are being met, the proposed action level is meaningless and should not be finalized as proposed.

[1631] Commenters stated that the individual results from measurements taken during the six-month ICR fenceline monitoring program reflect a variety of concentrations with individual spikes well over the action level. Commenters provided figures that show the measured chromium concentrations using a TSP-based sampling method at the fenceline and 24-hour delta-c values for the 30 ICR monitoring days for the Gary Works, Granite City Works, Burns Harbor, and Cleveland Works facilities.

Response 1:

The EPA agrees with the commenter's assessment that the 0.1 µg/m^3 action level would not change as a result of any differences between the numbers used by EPA in their initial assessment and that performed by the commenter. In addition, the EPA notes that the reduction of 20% also did not impact the action level when taken to a single significant digit. The EPA recognizes that, as stated by the commenter, the magnitude of fugitive emissions from UFIP or any other sources, including meteorological conditions, the location of onsite emission sources in relation to the monitor locations, emission release parameters, and the proximity and impact of offsite sources of chromium all impact the fenceline concentration. The impact of near field offsite sources of chromium may be compensated for through the use of a site-specific monitoring plan. It is unclear just what impacts the commenter is concerned with meteorological conditions, but on-site sources, UFIP or otherwise, are accounted for in the action level as discussed previously, and the long term average of the action level mitigates impacts from short term meteorological conditions. The EPA agrees with the commenter that individual results taken during the six month period exceeded the concentration that is the action level. These individual concentrations however would not actually exceed the action level, as the action level is based upon an annual average rather than an individual sample result. Accounting for short term normal fluctuations in fenceline concentrations is one reason for the annual average being used for the action level.

Comment 2:

[1631] Commenters stated that the EPA has made a number of assumptions to establish the 0.1 µg/m^3 action level, and some of the EPA's assumptions are subject to change due to errors or better data becoming available. For example, the EPA's assumption is based on an expected level of reduction in Gary Works' UFIP emissions once those sources comply with the new opacity and work practice standards. However, there are a number of errors in the EPA's assumed emission rates for the Gary Works current UFIP emissions as well as the level of reduction that would be expected if the UFIP sources comply with the opacity and work practice standards. For example, the EPA had projected current HAP emissions at 55.9 tpy, and commenters projected them to be 3.04 tpy after corrections and better data is taken into account for certain PM emission factors, the PM-to-HAP ratios, and the estimated reduction rates. If any of these emission reduction estimates were to change, the basis for the 0.1 µg/m^3 is jeopardized and potentially arbitrary and capricious if the basis is no longer reasonable and justifiable. The EPA should therefore defer establishing an action level until it is able to ensure that the action level is reasonable and justifiable by taking into account seasonal variability, the sampling method to be used in the future, a connection between UFIP emissions before and after compliance with the new opacity and work practice standards, and a demonstrated, verifiable connection between UFIP emissions and monitored chromium concentrations.

Response 2:

As noted in the previous comment and response, in maintaining the action level at a single significant digit, the impacts of the 20% reduction are minimized. The EPA is promulgating the action level at 0.1 µg/m^3 as proposed.

Comment 3:

[1594] Commenters stated that the EPA is required to promulgate MACT standards, which must reflect the maximum degree of emission reductions of HAP achievable (after considering cost, energy requirements, and non-air quality health and environmental impacts). The MACT floor limits for relevant HAP are calculated based on the average performance of the best-performing five units in each category or subcategory with fewer than 30 sources. In setting other fenceline standards, the EPA has based the action levels on modeling using emissions inventories and MACT.

[1594] Commenters stated that the EPA has acted arbitrarily and capriciously by using a different method to set the action level for the II&S sector compared to the method used for other sectors. In 2015, the EPA developed a similar fenceline standard for refineries ("2015 Refinery Rule"). In the 2015 Refinery Rule, the EPA set the action level to be consistent with the reported inventories such that if all were accurate, all facilities should be able to meet the fenceline concentration action level. More recently, the EPA followed the same method to set action levels in the NESHAP revisions for the HON, SOCMI and P&R I and II categories and the currently proposed NESHAP revisions for coke ovens. In all of these instances, the EPA set the action level based on modeling conducted using emissions inventories reported as part of CAA Section 114 information collection requests.

[1594] Commenters stated that for the II&S sector, the EPA "derived the proposed action level of 0.1 $\mu g/m^3$ by first evaluating all the fenceline chromium results to determine the highest measured 6-month delta c average level across all facilities (which was determined to be 0.154 $\mu g/m^3$ at the U.S. Steel Gary facility)." The EPA has not offered a reason for treating differently the aforementioned sectors from the II&S facilities, where the fenceline standard action level is based exclusively on fenceline monitoring data. Commenters stated that the EPA has acted arbitrarily and capriciously in setting the chromium action level for II&S facilities. Thus, the EPA should instead base the action level on modeling as the EPA has done with other sectors, which would result in a lower fenceline standard.

[1594; 1627] Commenters stated that even if the EPA can sufficiently explain why an action level was set for chromium for II&S facilities based on fenceline monitoring, the EPA should set the action level below 0.1 $\mu g/m^3$ because fenceline data collected as part of EPA's CAA section 114 collection request shows that a lower action level is achievable. Because the EPA did not request that all eight II&S facilities perform fenceline monitoring pursuant to the section 114 request, the EPA did not identify the top five best performing facilities. However, two of the four facilities that conducted fenceline monitoring (Cleveland Works and Burns Harbor) had 6-month chromium delta c averages below 0.08 $\mu g/m^3$, and a third facility (Granite City) is projected to be at 0.09 $\mu g/m^3$ after implementing provisions of the rulemaking. The EPA has failed to explain why they are requiring an action level that constitutes the lowest number (0.1 $\mu g/m^3$) instead of the level that three of the four facilities that conducted fenceline monitoring are able to meet (0.10 $\mu g/m^3$). Accordingly, the EPA should set the action level below 0.1 $\mu g/m^3$.

Response 3:

EPA disagrees with commenters that we acted arbitrarily and capriciously in setting the fenceline action level. Fenceline monitoring is not a MACT floor, but a technology advancement proposed according to CAA section 112(d)(6). At refineries, the action level was set as the highest

modelled value for all facilities. For this source category, modelling was not used due to the complexity and uncertainty associated with the UFIP sources. Consistent with the use of the highest modelled value, we used the highest measured value, and then adjusted it slightly downward to reflect the expected emissions reductions that will be achieved by this final rule, to derive the action level for this source category. Also consistent with refineries and all other proposed fenceline monitoring standards, we are implementing the action level as a single significant digit as discussed further in the response to Comment 5 of this section.

Comment 4:

[1631] Commenters stated that the EPA's analysis of Gary Works' monitored data reflected an average delta-c concentration of 0.154 $\mu g/m^3$, and the EPA presumed that that Gary Works would be able to stay below an action level of 0.1 $\mu g/m^3$ if it complied with the proposed new opacity and work practice standards. The EPA made a series of assumptions without any technical support and engineering analyses. The EPA assumed that if Gary Works met the new opacity limits and work practice standards, it would reduce its UFIP-related HAP metal emissions by 20 percent as well. Another assumption is that if the HAP metal emissions from the UFIP sources were reduced by 20 percent, then the ambient concentrations of chromium should be reduced by 20 percent. A final assumption is that if ambient chromium concentrations were reduced by 20 percent, then the highest annual average delta-c concentration should be no greater than 0.123 $\mu g/m^3$. The EPA then rounded down to set the action level at 0.1 $\mu g/m^3$, based on its assumption that Gary Works would be able to achieve the action level without further reductions in emissions. However, even assuming all of the EPA's assumptions are correct and Gary could meet the 0.1 $\mu g/m^3$ action level, the EPA admits that Gary Works would not be able to meet 0.08 or 0.09 $\mu g/m^3$ action levels without further reductions, and that would be true based on the six-month average delta-c of 0.149 calculated by commenters. The EPA estimated at least a 42 percent reduction in HAP emissions would be needed—assuming UFIPs were the only contributors to the monitors (which is not the case). This would be true even if the UFIP sources were meeting all of the standards and their emission reductions were as high as the EPA estimated. Despite the statements that a 42 percent reduction would need to be achieved by Gary Works to meet the lower action levels, the EPA offered no suggestions as to how Gary Works could further reduce its UFIP emissions by that amount nor any estimate of what it might cost to achieve such low levels.

[1631] Commenters stated that the EPA should not set an action level that would be triggered if the UFIP sources were meeting all of the proposed opacity limits and work practice standards, which is the EPA's stated purpose for establishing the fenceline monitoring program. Because the EPA did not consider or analyze whether II&S facilities could maintain UFIP emissions at rates to ensure that the action level would not be triggered or how much it would cost to maintain emissions below the action level, the EPA should not entertain these lower values of 0.08 and 0.09 $\mu g/m^3$. Commenters stated that for the EPA to do so would be arbitrary and capricious per se.

[1631] Commenters stated that a greater than 40 percent reduction in UFIP source emissions would be needed at Gary Works to achieve a 0.09 $\mu g/m^3$ action level, assuming that all or nearly all of the chromium measured at the monitors is emitted from UFIP sources (which is not the case). Based on EPA's approach, if the action level were to be set to a value below 0.1 $\mu g/m^3$,

and even assuming that UFIP contributions to the monitor were 70 percent or more, then reductions far greater than the 20 percent reduction that the EPA proposed would be required to stay below the action level.

Response 4:

The EPA agrees with the commenter that the fenceline monitoring program is not an emission limit, nor is it intended to gain further reductions in emissions beyond those already required under the emission limits and work practice standards for individual sources within the facility, but to identify potential issues more promptly in order for a facility to find and fix potential excessive emissions. The EPA is finalizing the action level at 0.1 $\mu g/m^3$ as proposed.

Comment 5:

[1594; 1627] Commenters stated that regardless of the numeric value selected for the action level, the EPA should express the chromium action level in $\mu g/m^3$ to at least two decimal places and clarify that rounding occurs to the second decimal place (e.g., 0.11 $\mu g/m^3$ would not round down to 0.10 $\mu g/m^3$ and would therefore exceed the action level). The EPA states that "[b]ecause of the variability and limitations in the data, to establish the proposed action level we rounded[...]to one significant figure (i.e., 0.1 $\mu g/m^3$)." Commenters stated that there are two issues with this statement: (1) significant figures do not completely characterize numerical precision, and (2) reporting chromium concentrations in $\mu g/m^3$ to one decimal place does not reflect the precision of modern sampling and analytical techniques.

[1594] Commenters stated that in response to the first point, consider two hypothetical reported chromium concentrations: 0.1 $\mu g/m^3$ and 0.01 $\mu g/m^3$. Both have only one significant digit, but the second concentration is reported with a greater level of precision. As for the second point, Table 1 in EPA Compendium Method IO-3.5, which was the analytical method used to determine fenceline chromium concentrations as part of the EPA's CAA section 114 ICR, lists the estimated method detection limit for chromium as 0.01 ng/m^3 (0.00001 $\mu g/m^3$). This low method detection limit demonstrates the sensitivity and precision of modern sampling and analytical methods. As such, chromium concentrations measured with these methods should be reported to at least two decimal places (assuming units of $\mu g/m^3$).

Response 5:

The EPA disagrees with the commenter that more than one decimal place should be used for the action level and further disagrees with their definition of precision. Measurement precision relates to the degree of variation in repeated measurements, and not what decimal place a reading is. In the example proposed, 0.1 $\mu g/m^3$ and 0.01 $\mu g/m^{3,}$ these are merely two values of differing magnitude, and not two values of different precision.

The EPA also disagrees that the detection limit of EPA Compendium Method IO-3.5 has meaning in this context. The detection limit is the lowest level at which a valid measurement can be collected, beyond indicating that, in this case, the measured values are with the measurable range, it has no practical impact upon the number of significant digits appropriate.

While the analytical techniques may be able to determine the concentration out to more than one significant figure, the setting of the action level is based not just upon the measurement itself, but

upon projected gains under the newly required limits on UFIP and the calculation of delta c, further complicating analysis. The EPA is finalizing the action level at one significant figure as proposed.

4.2.3 Proposed sunset provision for fenceline monitoring

Comment 1:

[1562; 1592] Commenters did not support a sunset provision. If the goal is fugitive emissions management as well as public transparency as discussed in the proposal a sunset provision will remove these benefits over time.

Response 1:

The EPA recognizes the commenters opposition to the sunset provision. The EPA has implemented in the rulemaking additional restrictions on UFIP sources that will reduce fugitive emissions permanently. The sunset provisions are set such that facilities are required to continue monitoring until their annual average delta c has been at or below half of the action level for 24 successive months (this translates to approximately 121 individual determinations of the annual average). The sunset provision is set to incentivize the proper operation and practices to limit fugitive emissions from sources. The EPA projects that, for facilities that meet this requirement, they will have control of their fugitive emissions sources on an ongoing and continuous basis.

Comment 2:

[1594; 1683] Commenters suggested that the EPA adjust the proposed sunset provision as follows: (1) the evaluation period should be 36 months instead of 24 months and (2) monitoring should not stop completely but rather become less frequent. If sampling is reduced through this sunset provision to once every 12 days instead of every six days, this would cut sampling effort and costs in half.

Response 2: The EPA disagrees with the commenter that a 36 month period is necessary prior to the sunset provision being requested. As noted in the response to the previous comment, the sunset provisions are set such that facilities are required to continue monitoring until their annual average delta c has been at or below half of the action level for 24 successive months (this translates to approximately 121 individual determinations of the annual average). The EPA has determined that, for this source category, the number of samples required to be below the half of the action level is sufficient to demonstrate ongoing control of their fugitive emissions sources.

Comment 3:

[1631] Commenters stated that the 2023 Proposal provides that, when the annual rolling average delta-c remains less than 0.05 $\mu g/m^3$ for 24 months in succession, the facility may request a "test waiver" from the Administrator to remove or reduce fenceline sampling requirements. The proposed rules include no criteria for the Administrator's decision and without a deadline for taking action. The preamble, on the other hand, reads as if the sunset provision is self-implementing and essentially automatic if the 12-month average is below 50 percent of the action level for 24 consecutive months, which should be the case. Commenters stated that the

EPA should revise the rules to remove the test waiver provisions and provide for self-implementation and automatic sunsetting when the threshold criteria are met.

[1631] Commenters stated that the preamble also states that if these criteria are met, no fenceline monitoring is needed "as long as they continue to comply with all other proposed requirements described in this proposed rule along with all other requirements already established in the current NESHAP." The proposed rule language does not include a revocation provision, and presumably this text in the preamble is meant to clarify that the remainder of the NESHAP provisions would remain applicable, not that sunset of the fenceline monitoring program would be revoked if an affected source were to exceed a limit or to be found in violation of an applicable requirement. Commenters stated that the EPA should include rule language or at least an explanation in its response to comments to clarify that qualification for the sunset is not tied to full compliance with all NESHAP applicable requirements, nor would the sunset ever be revoked if a violation of a NESHAP requirement occurs in the future.

[1631] Commenters stated that the proposed sunset is tied to the delta-c annual average concentration of 0.05 µg/m^3, which is half of the action level. This is an arbitrarily low number and not in any way tied to the expected reductions in fugitive emissions that EPA anticipates when UFIP sources comply with the proposed opacity limits and work practice standards. The Gary Works facility, for example, may never be able to have its monitoring program sunset because EPA has projected that with a 20 percent reduction in its fugitive emissions, it would be hovering near the 0.1 µg/m^3 level (and would be above the level if the more accurate reduction rates of 12-14 percent are assumed). Assuming there are offsite or non-UFIP onsite contributors to the monitored chromium concentration rates at the fenceline, the Gary Works facility may never have an annual average delta-c level below the 0.1 µg/m^3 level and certainly not less than the sunset level of 0.05 µg/m^3.

[1631] Commenters stated that the RIA actually reflects a sunset value at 0.1 µg/m^3, which is the same as the action level and double the value proposed by the EPA. The EPA provided no rationale or justification for an apparent change from the initial position that appears to be reflected in the RIA. Because the RIA assumed a much higher sunset value, it does not take into account any costs associated with a much longer period for continuing to operate the monitors if the threshold for sunsetting is reduced by half. Some facilities, based on the ICR fenceline monitoring program results, may never be eligible for sunsetting and could therefore be forced to continue operating their monitors in perpetuity. The ongoing costs for continuing the program based on a need to be at half the action level is not justified, especially when there are alternative methods available and already proposed to ensure that the new opacity and work practice standards are being met.

[1631] Commenters stated that the EPA should allow the fenceline monitoring program at a facility sunset as long as it has 12 months' worth of data reflecting annual averages below the action level. The EPA should also allow a program to sunset if the facility is able to demonstrate that an offsite source or non-UFIP onsite source is a major contributor and that if only the UFIP emission impacts were taken into account, the action level would not have been triggered in the past and is not expected to be triggered in the future.

Response 3:

The EPA recognizes that the language in the preamble may have given an appearance that a request for a waiver was unnecessary. The request for a test waiver, as outlined in the regulatory text, was intentional. Unlike other fenceline programs, as proposed the sunset provision is a complete cessation of fenceline monitoring rather than a step down in the frequency of sampling, a secondary review of the data to ensure the appropriateness of discontinuing fenceline sampling is appropriate. The EPA is finalizing as proposed the requirement for a test waiver request to be approved prior to the ending of fenceline sampling.

With respect to the language noted by the commenter in the preamble, "as long as they continue to comply with all other proposed requirements described in this proposed rule along with all other requirements already established in the current NESHAP." The intention was to indicate that no other provisions of the NESHAP are affected by the ending of the requirement for fenceline monitoring and not to put into place an automatic requirement to resume fenceline monitoring.

The EPA disagrees with the commenter that requiring a level below the action level prior to allowing the removal of fenceline monitoring is arbitrary. Similar to the allowances made for low emitting energy generating units (LEE) in 40 CFR part 63 subpart UUUUU, where stack monitoring is reduced for LEE units, the qualifications to not continue fenceline monitoring is to be well below the action level for an extended period of time. The EPA recognizes that some sources may not have levels at the fenceline sufficiently low to employ the sunset provision. The intention of the sunset provision is not to ensure that all sources would end their fenceline monitoring, but to incentivize the proper operation and practices to limit fugitive emissions from sources. EPA disagrees that a single year of annual averages is sufficient to sunset the fenceline requirements. As the commenter noted, in addition to seasonal and production variations, there are intermittent sources of fugitives that may only be captured on a very occasional basis. As well, unlike fenceline monitoring using EPA Method 325A/B, for this rule, samples are collected on an every 6 day basis rather than continuous, thus a longer than one year period is necessary to ensure that levels remain below the action level are necessary. The two year time frame is also analogous to the two year period for each level of step down in monitoring in the refineries fenceline program and the proposed HON and coke oven fenceline work practices.

With respect to offsite contributions, the site-specific monitoring plan provides an option for facilities to correct their delta c values for just this sort of issue. As the action level includes not just the UFIP sources, but all sources of emissions of chromium, whether onsite contribution is from the UFIP sources is immaterial. The EPA is finalizing these provisions as proposed.

4.2.4 Electronic reporting for fenceline monitoring

Comment 1:

[1594; 1592] Commenters stated that the EPA should require that II&S facilities submit fenceline monitoring data to CEDRI every two weeks, rather than every quarter. As part of a recent Consent Decree for a chemical manufacturing facility, those sources are required to publish bi-weekly sampling period results within 30 days of the end of the sampling period. The EPA has not explained why II&S facilities cannot fulfill these same reporting requirements.

[1594] Commenters stated that the EPA does not explicitly provide when sources must submit their quarterly monitoring reports nor specifically when that information will be "subsequently available to the public via […] WebFIRE." (88 Fed. Reg. 49412, 49415.) The EPA acknowledges that "public reporting of fenceline monitoring data provides public transparency and greater visibility, leading to more focus and effort in reducing emissions." *Id*. However, such infrequent reporting (every quarter) runs afoul of the importance the EPA highlights in requiring such reports. If the EPA were to follow the same reporting timelines as the refinery rule, a facility would have 45 days to submit quarterly reports, followed by a 30-day holding period at the EPA. By the time reports are made available via WebFIRE, data would be up to six months old, and the subsequent quarter would be nearly over. Commenters stated that the EPA should follow the requirements within the Consent Decree for the chemical manufacturing facility: II&S operators should have to submit fenceline monitoring data within 30 days of the end of the respective sampling period.

[1594] Commenters stated that in addition to submitting fenceline monitoring data to the EPA, these II&S facilities should be required to post bi-weekly sampling period results to their company websites. These reports should include a map of all the monitoring sites located along the fenceline, a table providing the coordinate pairs for each site, the last 12-months of monitoring data for each site, and the current annual average delta c concentration, as they apply to the action level. Incorporating this additional report format with each data submission will facilitate community members' access to the monitoring data, especially since the EPA's WebFIRE interface can be complex and challenging for a non-technical user. Several chemical plants already adhere to a similar report structure under a consent decree, making this a feasible request for II&S facilities.

[1594] Commenters stated that the EPA should also require that a corrective action plan be submitted via CEDRI and subsequently available via WebFIRE. These plans should also be sent to state environmental agencies. Requiring the same data to be submitted to state agencies and made publicly available to community members at the same time allows regulators to detect non-compliance earlier and communities are simultaneously informed of dangerous, higher concentrations of chromium (and lead if the EPA includes lead in the fenceline standard, as they should) with less delay.

[1594] Commenters stated that as the EPA begins to collect more fenceline monitoring data, the Agency should develop a plan to incorporate all the data into one location. The EPA currently maintains a website, Fenceline Monitoring Data Collection and Reporting, that houses all the benzene data from refineries. The fenceline monitoring data required by the II&S proposed fenceline standard should be incorporated into this data dashboard, to allow the public and regulatory agencies to access and analyze the data more easily. In addition, the EPA should provide a publicly accessible application programming interface or other widely recognized standard for the fenceline monitoring dashboard that is documented using a widely recognized standard such as OpenAPI. By incorporating an application programming interface into the data dashboard the EPA maintains, regulators and communities can quickly download and analyze various subsets of the database without having to download data for individual facilities and reporting periods. Commenters stated that at minimum, the EPA should incorporate a variety of bulk download options into the dashboard. Implementing these changes can help ensure that the

data is transparent and accessible to the public, facilitating greater accountability and public participation in decision-making and, if necessary, enforcement.

Response 1:

The EPA disagrees with the commenter that reporting on a two-week basis is necessary for the fenceline monitoring. The measurement methods used in the fenceline monitoring program require, after collecting the sample, shipping to a laboratory and subsequent analysis and reporting of the sample. Therefore, we have finalized reporting requirements to provide a reasonable amount of time for analysis and review of the results. For practical reasons, we also require reporting of quarterly results in order to manage the burden associated with reporting as well as reviewing information once it is reported into our CEDRI system.

The EPA disagrees with the commenter that the proposed rule text does not specify when the quarterly fenceline monitoring reports are due to be submitted. At 40 CFR 63.7841(h), the last sentence stipulates that each quarterly report must be submitted no later than 45 days following the end of the reporting period (*i.e.*, end of the quarter). Once submitted to CEDRI, the reports are held for thirty days processing period for review by the appropriate EPA region, state, local, or Tribal authority before being released to WebFIRE. This timeframe is discussed in detail in *Electronic Reporting Requirements for NSPS and NESHAP Rules* (EPA-HQ-OAR-2002-0083-0909).

The EPA disagrees with the commenter that requiring biweekly updates to a facility website is necessary under these fenceline provisions. Each quarterly report provides the latitude and longitude of each sample location as well as the annual average delta c for each sample period as well as the concentration at each sample point. These reports are publicly available via WebFIRE shortly after submittal (30 days).

The EPA disagrees with the commenter that corrective action plans should be submitted to CEDRI. Regarding submittal to state and local agencies, per 40 CFR 63.12(c), any information required to be submitted to the EPA shall also be submitted to the appropriate delegated authority, so additional requirements to submit the quarterly report or the corrective action plan to a state or local agency are unnecessary.

The EPA acknowledges the commenter’s suggestions for improving public availability of fenceline monitoring data. While the suggestions are not within the scope of this rulemaking, the EPA will consider these comments once the rulemaking is final and as resources and Agency priorities permit.

4.2.5 Fenceline non-chromium HAP emissions

Comment 1:

[1592] Commenters stated that the EPA must demonstrate, based on scientific support and data, that using chromium as a surrogate for all other HAPs emitted is reasonable. The EPA attempts to show chromium is a surrogate for other HAPs metals based on a limited data set—that has also been averaged—for arsenic, chromium, and lead. Commenters stated that this sample size is

far too small to draw such a conclusion from a scientific standpoint. The EPA claims that because arsenic values correlate approximately 90 percent with chromium values, chromium is a surrogate for other metals. However, simply asserting a purported correlation exists without sufficient evidence was squarely rejected by the court in Mossville Envtl. Action Now v. EPA as insufficient to meet the legal reasonableness test of using surrogates to avoid regulation of other HAPs, including more robust monitoring.

[1592; 1627] Commenters stated that the EPA possesses previous ambient air monitoring studies at II&S facilities that have shown harmful concentrations of multiple toxic pollutants at and beyond the facility fenceline, including from Middletown Works. Further, air monitoring technologies and protocols are well established for all identified pollutants. Commenters stated that the rule should be revised to require fenceline ambient air monitoring systems that are continuous (when technically feasible) and inclusive of all hazardous and criteria air pollutants having the potential to be emitted from these facilities. Each system design should be submitted to the EPA as soon as feasible for review and approval.

Response 1:

The EPA disagrees with the commenter that, for the purpose of fenceline monitoring, using chromium as a surrogate for all metal HAP is inappropriate or inadequate. The fenceline monitoring standard was proposed as part of the technology review to improve management of fugitive emissions and not as a risk reduction measure. In order to meet that goal of improved management of fugitive emissions, it is not necessary to obtain an accurate picture of the level of all HAP emitted. We chose to propose fenceline measurements only for chromium because it was a risk driver in the 2020 RTR analyses and has been determined to be a good surrogate for other HAP metals, especially arsenic, which was the other HAP metal driving the risks in the 2020 RTR risk analyses.

The EPA recognizes there are multiple toxic metals emitted by various facility processes from the iron and steel facilities. We reiterate that we did not intend to measure all pollutants, especially pollutants that are emitted from point sources that are directly measurable through source tests and continuous monitoring systems. These emissions sources and pollutants are subject to other standards under these MACT. We disagree that it is necessary to monitor for every HAP emitted from fugitive emission sources at integrated iron and steel facilities. Integrated iron and steel emissions can contain many different HAP and it is very difficult for any method to detect every HAP potentially emitted from integrated iron and steel facilities.

The EPA disagrees with the commenters that the use of real time monitoring at the fenceline for each hazardous air pollutant and criteria pollutant. Criteria air pollutants are outside the scope of this rulemaking as this is solely related to the NESHAP. The current continuous monitoring method for metals is available from a single vendor, of limited availability, and as demonstrated by the quotation provided by another commenter (EPA-HQ-OAR-2002-0083-1616), the costs for real-time monitors are excessive. The EPA is not making any rule changes as a result of this comment. As noted above, the fenceline monitoring standard was proposed as part of the technology review to improve management of fugitive emissions and not as a risk reduction measure. In order to meet that goal of improved management of fugitive emissions, it is not necessary to obtain an accurate picture of the level of all HAP emitted.

Comment 2:

[1627] Commenters stated that the EPA claims that lead and arsenic levels at the fenceline are acceptable in its view, and that lead concentrations are below the NAAQS. Yet the EPA has also found that steel mills emit 351 tons of toxic metals, every year, in fugitive emissions alone. Further, the record strongly indicates that lead and arsenic make up about 1/3 of these emissions – 117 tpy – and the EPA does not provide any emissions information to show otherwise. In northwest Indiana, where 4 mills are clustered and the aggregate emissions likely exceed 50 tpy when stack emissions are counted. Commenters stated that unless the EPA can show that actual emissions of lead and arsenic are lower than logic indicates based on the Agency's estimate of the mills' fugitive metals emissions, the conclusions about fenceline concentrations of these pollutants (and others) remain irrational.

[1562] Commenters stated that the EPA should monitor for lead and arsenic.

Response 2:

The EPA disagrees with the commenter that the fenceline monitoring requires changes as a result of these comments. In the 2020 RTR risk assessment, the EPA determined that the source category risks were acceptable, and that the NESHAP provides an ample margin of safety (AMOS). Issues related to that risk assessment are outside the scope of this rulemaking.

The EPA, to address gaps in emissions standards in accord with the *LEAN* decision, is finalizing standards for the UFIP sources to control metal HAP emissions, to reduce the sources of the emissions indicated by the commenter. The fenceline monitoring standard was proposed as part of the technology review to improve management of fugitive emissions and not as a risk reduction measure. To meet that goal of improved management of fugitive emissions, it is not necessary to obtain an accurate picture of the level of all HAP emitted. EPA did not propose nor are we prepared to promulgate a requirement to monitor any metals other than chromium as part of the fenceline requirement, but we intend to gather more fenceline monitoring data for lead in 2024 at Integrated Iron and Steel facilities to better characterize fugitive lead emissions.

5. Proposed Standards for Point Sources

Comment 1:

[1631] Commenters stated that the proposed MACT standards for HCl and THC for BF Casthouse Control Devices should be revised. EPA estimates that industry-wide BF Casthouse Control Devices emit 1.4 tpy of HCl and 270 tpy of THC (which EPA proposes as a surrogate for organic HAP). Testing results have shown that only trace amounts of HCl are emitted from BF Casthouses, meaning the concentration in the exhaust is very dilute.

Response 1:

The EPA disagrees with the commenter that a standard for HCl is not required due to the concentration in the exhaust gas being "dilute." The levels of HCl in the BF casthouse were above detection limits in all runs, and the calculated UPL was greater than 3xRDL. Emissions standards are required for each listed hazardous air pollutant emitted; accordingly, EPA is

finalizing standards for HCl as proposed. Regarding the THC limit for the BF casthouse, the commenter provided no details on what basis they disagreed with our approach. The EPA is finalizing the THC standard as proposed.

Comment 2:

[1631] Commenters stated that the control equipment evaluated by Industry Commenters is not in use at any of the facilities in this source category and the technological feasibility of installing the potential control equipment is unknown. Even if a technology existed and could be installed, there has been no testing to date of any of these pollution control technologies at facilities in this source category to determine if there would even be reliable emissions control, if any. The commenter said that even if new pollution control equipment were to be installed in within the 6 months allotted for compliance (which Industry Commenters do not believe is possible due to outage planning, testing, contracting, engineering evaluation, plant reconfiguration, air permitting requirements and numerous other time-consuming aspects of adding control equipment) and were to function as intended, facilities could spend millions of dollars and still have no certainty as to what removal efficiency could be achieved in practice for each affected source.

Response 2:

With regard to the 30 proposed new HAP limits for new and existing point sources, these limits are for previously unregulated HAP. Pursuant to the *LEAN* decision, CAA section 112(d)(2)/(3) and a court order issued in related action for EPA to complete this final rule fulfilling its CAA section 112(d)(6) mandate by March 11, 2024, Order, *California Communities Against Toxics v. EPA*, No. 15-512 (D.D.C. Sept. 20, 2023). EPA must establish standards for these HAP based on available data in this final rule.

We collected emissions test data through the CAA section 114 requests, and through public comments. We used all valid available data to calculate representative MACT floor limits using the well established UPL methodology which accounts for variability in the data. So, we are finalizing these limits similar to those proposed with some adjustments based on incorporation of new data received since publication of the proposed rule. Based on available data, we estimate that all facilities will be able to meet the MACT floor emissions limits for the point sources without the need for any additional control devices.

We also expect that no additional control devices will be needed to comply with the standards for UFIP emissions sources. The only new controls we expect will be needed to comply with this final rule is the ACI for control of D/F, PAHs and mercury, which is described in the preamble and in other EPA responses in this RTC document.

EPA is finalizing emissions standards for the point source HAPs at the MACT floor level for all except Hg. Based on the data received from the CAA section 114 request, it is not expected that facilities will need to install controls to meet the MACT floor-based limits.

Comment 3:

[1604] Commenters stated that improvement could come from further limits on the sinter plants at three Indiana mills. The commenter said sinter plants are unnecessary, but they account for

more than 90% of all the stack emissions from the entire industry. The commenter asked for the Agency to set limits for sinter plants based on the use of a WESP and ACI to ensure all the hazardous air pollutants that sinter plants emit are reduced to the maximum achievable degree, as the CAA requires.

Response 3:

As discussed in detail in the preamble to the final rule, the EPA is finalizing limits for PAHs, D/F and mercury that are based on installation and operation of ACI. This will ensure hazardous air pollutants from sinter plants are reduced.

Comment 4:

[1627] Commenters stated that EPA has left some emission sources and pollutants completely unregulated. In its 2020 rule, EPA identified three emission points as sinter plants, the sinter plants windbox, sinter plant discharge end, and sinter cooler. All three emission points are unregulated, yet – without any explanation – EPA proposes emission limits for just one, the sinter plant windbox. The commenter said EPA's continuing refusal to set emission limits for all the emission points and hazardous air pollutants at steel mills is flatly unlawful and defies repeated decisions by the D.C. Circuit. Further, EPA's failure to offer any explanation for leaving two out of three sinter plant sources unregulated is arbitrary.

Response 4:

The sinter plant windbox is the main source of HAP emissions from sinter plants. We are promulgating new MACT emissions limits for 5 HAP from the windbox as described in the preamble and elsewhere in this RTC document. We are also finalizing new specific emissions limits for D/F and PAHs from the windboxes pursuant our CAA section 112(d)(6) technology review. We have not yet identified any specific unregulated HAP from the sinter plant discharge end or sinter cooler that are not addressed by the current opacity and particulate matter standards.

Comment 5:

[1683] Commenters stated that the EPA should require substantial reductions in harmful stack emissions, and that up to 90 percent reduction seems possible. Commenters stated that currently the proposal does not address this issue adequately.

Response 5:

The EPA acknowledges the commenter's request for further reductions. The commenter provided insufficient information to assess what measures they deem practicable to reduce emissions by 90%. There are no changes to the final rule as a result of this comment.

Comment 6:

[1627] The commenter said for the non-sinter sources, the record makes clear that it is possible to obtain emissions information for more than 5 sources. There are 11 sources in the category and EPA states that 9 are currently operating. Thus, EPA can gather new emissions information

for at least 9 sources. Further, it is possible that there are historical data for sources that are not currently operating, and EPA is using such data for other floors. Because it is reasonably possible to obtain emissions information for at least 5 sources, EPA's failure to base floors on the top 5 is flatly unlawful. The commenter stated that EPA does not even claim that it could not reasonably have obtained emissions information for more sources for these floors. Nor could it plausibly make any such claim. For these limits, EPA could have used its ample § 114 authority to obtain emissions information for at least "5" of them. EPA chose not to gather the data it needed and now proposes limits that do not satisfy the statute. Because EPA does not explain how basing floors on just 1 or 2 sources comports with § 112(d)(3)(B), or even acknowledge this statutory provision, its floor approach is arbitrary as well as unlawful.

The commenter said EPA's proposed limits for sinter plant sources are unlawful and arbitrary as well. Because there are only 3 sinter plants, EPA could not base floors on 5 sources. In these circumstances, however, § 112(d)(3)(B) requires the agency to base floors on all the sources for which it reasonably can obtain emissions information. Because there are 3 sinter plants, EPA can reasonably obtain emissions information for at least 3 sources. The agency's failure to base its floors on the average emission level achieved by at least three sinter plants is unlawful and EPA's failure to explain how its floor approach comports with § 112(d)(3)(B), or even acknowledge this statutory provision is arbitrary.

Response 6:

The EPA has wide latitude to determine the extent of data-gathering necessary to solve a problem and courts generally defer to the agency's decision to proceed on the basis of imperfect scientific information, rather than to "invest the resources to conduct the perfect study." *Sierra Club v. EPA,* 167 F. 3d 658, 662 (D.C.Cir. 1999). "If the EPA were required to gather exhaustive data about a problem for which gathering such data is not yet feasible, the agency would be unable to act even if such inaction had potentially significant consequences . . . . [A]n agency must make a judgment in the face of a known risk of unknown degree." *Mexichem Specialty Resins, Inc.*, 787 F.3d. 544, 561 (D.C.Cir. 2015).

Over the past decade, the EPA has issued multiple information collection requests, a not insignificant effort that by any measure would satisfy the language in CAA section 112(d)(3)(B) to base standards on data "which the Administrator has or could reasonably obtain," and has gathered a significant amount of data from facilities in this source category and has used that data, as required under the CAA section 112(d)(2) and (3), to develop the standards for these sources. For each MACT limit, EPA had at least two stack tests from two different facilities for a minimum of six test runs. For most MACT limits, EPA had stack tests from four, five or six facilities (i.e., 12 to 18 test runs). Given that the facilities and operations are similar, we conclude that EPA had sufficient data to establish appropriate MACT limits. For more details, see the technical memorandum titled: *Maximum Achievable Control Technology Standard Calculations, Cost Impacts, and Beyond-the-Floor Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF*, which is available in the docket for this action.

5.1 Data used to calculate MACT floor limits

Comment 1:

[1631] Commenters stated that nearly all of EPA's proposed limits for each source type – BF Casthouses, BF Stoves, BOPF Primary Control Devices, and sinter/recycling plants – have a very small dataset. In most cases, EPA has only test results from two sources. Where EPA may have a test result consisting of the required three individual test runs, the testing results are for a single unit. Using limited datasets fails to ensure that EPA is determining what emission limitation the "best performers" are achieving, and this prevents a determination of the "average emission limitation" being achieved by such sources. Commenters also stated that EPA relies on data that is limited to the same season from around the same time period. This means that the tests do not represent performance of these "floor units" across the range of operations, processes, potential raw material inputs (e.g., coke, limestone, iron ore, dolomite, scrap), products being produced, and seasons in which a facility operates.

The commenter stated that there is only data from one test date for each of the three BF stoves in the MACT floor pool. Such a time-limited dataset cannot adequately characterize the THC and HCl emissions performance, since a single test event cannot reflect the range of operating conditions and other variability factors because it occurs over a fairly short period of time (i.e., the same day or over two to three consecutive days).

Response 1:

EPA acknowledges the small dataset used for the MACT floor limits. However, given the LEAN court-ordered decision, EPA must set limits for any measurable fugitive emission with the available data. Therefore, EPA is finalizing MACT floor limits based on the data collected in the 114 request from industry.

Comment 2:

[1631] Commenters stated that the available data does not support the thirty proposed HAP limits. They said the Agency made several errors in UPL calculations. For instance, in the proposed BF Stove THC and HCl limits as well as its BOPF Primary Control Devices THC limits, EPA has applied incorrect emission factors and used incongruous production data. Commenters stated that the proposed D/F limits for sinter/recycling plants include a rounding error.

Response 2:

The EPA understands that, when speaking of emission factors, the commenter is referring to the basis of the standard (*e.g.*, lb/ton iron produced). For the BF Stove, the EPA agrees with the commenter that an appropriate basis for the standard is in lb/MMBTU, and has revised the standards accordingly. The EPA has corrected the use of incongruous operating data for BOPF Primary Control Devices, and for the BF Stove, the issue is moot with the change in standard to a lb/MMBTU basis. The EPA agrees with the commenter that the D/F standard for sinter plants was incorrectly rounded at proposal and the proposed standard should have been 3.6E-08 lb/ton sinter. For the final rule however we are finalizing the beyond the floor standard as discussed in the preamble to the final rule and this error has no impact on the final rule.

Comment 3:

[1631] Commenters stated that the proposed BF Stove emission limit for HCl fails to account for variations in raw materials, process, and operations. In addition to variability between feed types, there can be variations within a single feed type. The commenter said the limited data set also does not account for the variation in emissions attributable to the different fuels that may be combusted by BF Stoves. Commenters stated the proposal fails to account for variations in raw materials, process, and operations for the proposed THC limits or provide a reasonable basis for THC as an organic HAP surrogate. The commenter said any THC emissions come down to combustion efficiency. Thus, rather than a numeric THC limit, EPA should propose a work practice to maintain good combustion practices. In addition to failing to account for variability, EPA has erroneously applied an incorrect emissions factor in its UPL calculations for its proposed HCL and THC limits and must correct it. The use of incorrect production data resulted in EPA severely underestimating six HCl emission factors and six D/F TEQ emission factors, which are used in EPA's UPL calculations. Industry Commenters provide the corrected values in Appendix J.

Response 3:

The EPA must set numeric standards unless a specific source qualifies for a work practice standard under CAA section 112(h), and therefore, we disagree with the commenter. The commenter is correct that good combustion is the key to effective organic HAP control, and the numeric limit reflects levels associated with good combustion. As explained in the preamble, we made several corrections and updates to the MACT limits based on public comments. For more details see the preamble and the technical memorandum titled: *Maximum Achievable Control Technology Standard Calculations, Cost Impacts, and Beyond-the-Floor Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF*, which is available in the docket.

Comment 5:

[1631] Commenters stated that setting a MACT limit for HCl is unnecessary for BF Casthouse Control Devices. EPA-estimated source category emissions of HCl from BF Casthouse Control Devices is 1.4 tpy. This is less than 1 percent of the HCl emissions from EPA's total of 217.9 tpy of HCl from all of the processes EPA is considering in this rule. One of the 6 test runs for HCl from BF Casthouse Control Devices measured BDL. (2023 Data Memo) Requiring the same compliance measures for BF Casthouse Control Devices (testing every 5 years) as the process category emitting 200 tpy which EPA primarily attributes HCl emissions is not reasonable. The commenter said if EPA nevertheless proceeds with THC or HCl limits for BF Casthouse Control Devices, EPA must revise the limits to be representative of what is achieved by the best-performing units taking into account the range of operations, processes, and seasons.

Response 5:

The EPA is required to establish MACT standards for HCl if it is emitted from a process in the source category pursuant to the LEAN court decision and CAA section 112(d)(2)/(3), as explained in several other EPA responses in this RTC document.

Comment 6:

[1631] Commenters stated that EPA's proposed new source and existing source D/F limits for BOPF Primary Control Devices are not representative of current performance due to the frequency of near BDL or below DL results. EPA uses insufficient data in setting its proposed limits for BOPF Primary Control Devices. MACT limits must be representative of what is achieved by the best-performing units across the range of operations, processes, and seasons to account for the variability. The commenter said EPA should propose a pollution control technique, such as a work practice, rather than numerical standards for D/F, if the agency nevertheless pursues a limit.

Response 6:
Pursuant to the LEAN decision, CAA section 112(d)(2)/(3) and the Court's Order for EPA to complete this final rule (that fulfills the CAA section 112(d)(6) mandate) by March 11, 2024, EPA must establish standards for previously unregulated HAP based on available data in this final rule.

We collected emissions test data through the CAA section 114 requests. For D/F from the BOPF, 50% of the test runs exceeded the detection limit as defined in the Johnson memo (EPA-HQ-OAR-2002-0083-1082). Therefore, we have data that indicates D/F are emitted from the BOPF. Regarding the comment about test results that are near or below detection levels, in order to ensure that standards are established at levels that can be accurately measured, the EPA uses the 3xRDL approach. The 3xRDL approach is explained further in other responses in this document.

Comment 7:

[1631] Commenters stated EPA used a skewed template when data distribution calls for a lognormal template to set more stringent D/F and HCl MACT standards. In the case of EPA's proposed D/F and HCl limits, when data is input, the dataset EPA used is identified as "lognormal." (2023 MACT Costs Memo at 13) The commenter stated in development of D/F and HCl standards, EPA appears to have recalculated a UPL value using a skewed distribution UPL template after the result of its lognormal UPL calculation resulted in a ratio of the UPL value-to-the average of the data points in the MACT floor pool that was greater than 15. The D/F and HCl UPL values EPA calculated using the skewed UPL distribution template were orders of magnitude lower than what the UPL values would have been when using the lognormal UPL template – which the distribution of the underlying data had called for.

Response 7:

All MACT limits in this final rule were developed using the well established UPL methodology and/or 3xRDL approach. The UPL approach includes a determination for each HAP of whether or not the test data exhibits a skewed distribution. The D/F and HCl standards in question are based on data sets that the EPA determined were best represented by a skewed distribution. The details of such analyses and calculations are described in the MACT memo, which is available in the docket for this action.

Comment 8:

[1631] Commenters stated that EPA should not finalize the proposed THC limits for BOPF Primary Control Devices. The limited THC dataset from only 2 tests on which EPA relies shows

almost nothing except for spikes in data. Method 25A, which was used to measure THC concentrations, is a continuous analyzer; therefore, EPA received metadata for continuous monitoring that showed consistent approximate readings of a few parts per million (i.e., essentially zero) followed by short-term (approximately 1- to 2- minute) elevations. In other words, THC emissions remained BDL except for short duration castration spikes during tests. Yet, EPA proposes to rely on these momentary spikes as evidence of "THC" emissions. The potential drivers for these anomalous THC spikes, such as potential contaminants, cannot be evaluated without speciated results. When considering potential for future similar short-term spikes, the highest potential concentration is impossible to predict and therefore EPA's reliance on this limited dataset as representative of anticipated THC emissions is not reasonable. Commenters stated that if EPA proceeds with the proposed limits, EPA must correct its proposed THC limits. EPA only requested specific test results from Industry Commenters in 2022 and did not request the corresponding production values. Industry Commenters have provided comprehensive responses to EPA's 2022 ICR and timely supplemental information when requested from the agency. Instead of requesting the corresponding production values from Industry Commenters, EPA mixed and matched data. As a result, the proposed THC emissions for BOPF Primary Control Devices were grossly underestimated, and therefore the proposed limits do not represent the performance of any unit, let alone best performers. Industry Commenters provided production rate data to EPA on May 26, 2023. (See Email from S. Fruh, U.S. EPA, to P. Mulrine and H. Key, U.S. EPA, on U. S. Steel email regarding additional production and heat input information (May 25, 2023), EPA-HQ-OAR-2002-0083-1346) Instead of finalizing unrepresentative standards, EPA should use the 2022 production values to revise its proposed THC limits.

Response 8:

The EPA disagrees with the commenter that an irregular emissions profile (spikes in the data) would be a reason to not implement a standard. Many processes have periodic increases in their data, and these are accounted for by the averaging period of the standard and the UPL calculations. The EPA is required to establish MACT standards for a HAP if it is emitted from a process in the source category pursuant to the LEAN court decision and CAA section 112(d)(2)/(3), as explained in several other EPA responses in this RTC document. The EPA has proposed and is finalizing the THC standard as a surrogate for all organic HAP (except dioxins and furans) from the BOPF.

Comment 9:

[1631] Commenters stated that EPA should not finalize its proposed emission limits for sinter/recycling plant D/F and PAH emissions because they are based on inadequate data and/or floor-setting analyses. EPA claims "we are proposing to . . . revise standards for D/F and PAHs from sinter plants to reflect the performance of current control devices." The commenter said this is not what EPA actually proposes, due to its use of inadequate data and errors in its calculation for proposed limits. EPA used the same insufficient dataset to develop its D/F and PAHs limits for sinter/recycling plants. "As part of our [2023] updates to the CAA section 112(d)(6) review, [EPA] analyzed available test data for D/F and PAH from sinter plants." Available test data included sinter windbox emissions of three of the sinter/recycling plants in operation at the time, which was collected over only a brief period time. For example, D/F TEQ testing took place in three months (March, April, and July of 2012.). The commenter stated that these three months

are not enough to cover the variability that would be reflected in a year's worth of data. To account for limitations in the dataset, EPA should again decline setting standards based on the UPL approach.

Response 9:

As described in the preamble and in other EPA responses in this RTC document, after reviewing public comments from various stakeholders and evaluation of available control technologies, we are finalizing emissions limits for D/F, PAHs, and mercury from sinter plants that reflect the installation and operation of ACI controls. The addition of ACI is estimated to result in total combined capital costs of $950K, annualized costs of $2.3M, will achieve 8 grams per year reductions of D/F TEQ emissions, 5.4 tpy reduction in PAHs, and 47 pounds of mercury. Details for these cost calculations can be found in the memo titled *Maximum Achievable Control Technology Standard Calculations, Cost Impacts, and Beyond-the-Floor Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF*.

Comment 11:

[1631] Commenters stated that EPA inappropriately used 3xRDL values for its proposed CS_2 and HF limits in place of its higher calculated UPL limits. In developing its proposed limits for HF and CS_2 limits, EPA did not follow its policy that: "The larger of the 3xRDL value and the calculated UPL value is used for the MACT standard emission limit to ensure that measurement variability is adequately addressed." (2023 MACT Costs Memo at 7) The 3xRDL limit for HF and CS_2 that EPA calculated was lower than the UPL limit. Typically, this would lead to EPA using the higher UPL for the MACT limit rather than the lower 3xRDL value. Here, instead, EPA applied a new criterion, explaining that: "The 3xRDL value was used as the limit for this pollutant because greater than 50 percent of the data runs were BDL." (Id. At 19-21, tbl. 24) If EPA were to proceed with individual numeric limits for these pollutants (which Industry Commenters view as inappropriate for all of the above reasons), EPA should use the UPL rather than the 3xRDL value to set its proposed HF and CS_2 limits.

Response 11:

See EPA's response to the previous comment above, numerical standards for CS_2 and HF are not being finalized.

Comment 12:

[1631] Commenters stated that the claim that existing sources can assure compliance with the new standards without additional controls is incorrect. EPA asserts in the proposal that existing sources can comply with the new standards without additional controls. Yet EPA has not shown that the new standards are achievable and maintainable by any point source, let alone are representative of its purported best-performing point sources if operational, process, raw material, and measurement variability are taken into account (or are providing a sufficient compliance margin). The commenter said that EPA's statement is based on blurred logic because, even if best performers were to be achieving the standards, it does not follow that they can do so consistently or that all other sources at II&S facilities are also meeting those limits. The limited test data underlying EPA's proposed thirty standards also means there is a high level of uncertainty regarding emission rates from existing process units, further supporting the notion

that companies would need to install additional control equipment to mitigate the risk of exceeding the proposed MACT limits for point sources. In order to utilize these controls, companies would need to undertake extensive testing and analysis, including pilot demonstrations, prior to commercial-scale deployment across the industry. EPA has not only failed to account for any of the costs associated with these activities, but it has also assumed that they are not required at all.

Response 12:

As explained in the preamble and other EPA responses above, we expect that the only additional control devices that will be needed is the ACI for sinter plants (to control D/F, PAHs and Hg). We acknowledge that we have limited data. However, the data we have indicates that no other new control devices will be necessary, and we have no data or other evidence that indicate new additional controls will be needed to comply with the limits except for the ACI for sinter plants windboxes, as described above.

5.3 Potential surrogates for HAP

Comment 1:

[1631] Commenters stated that the proposed limit for THC from BOPF Primary Control Devices is problematic because THC is not a HAP and has been proposed by EPA as a surrogate for organic HAP, absent any speciated justification to establish THC as a proper surrogate for THC this industry. EPA's proposed limit for THC from BOPF Primary Control Devices is unnecessary as the 13 tpy of THC from the BOPF Primary Control Devices makes up just 2.7% percent of the total THC emissions at issue in this rulemaking (483 tpy), based on EPA's conservative upper-end assumptions.

Response 1:

In considering whether the EPA may use PM, a criteria pollutant, as a surrogate for metal HAP, the D.C. Circuit in *National Lime Ass'n v. EPA*, 233 F.3d 637 (D.C. Cir. 2000) stated that the EPA "may use a surrogate to regulate hazardous pollutants if it is 'reasonable' to do so," , establishing criteria for determining whether the use of PM as a surrogate for non-mercury metal HAP was reasonable. The court found that PM is a reasonable surrogate for HAP if: (1) "HAP metals are invariably present" in the source's PM," *id*.; (2) the "source's PM control technology indiscriminately captures HAP metals along with other particulates," *id*. at 639; and (3) "PM control is the only means by which facilities 'achieve' reductions in HAP metal emissions," *id*. If these criteria are satisfied and the PM emission standards reflect what the best sources achieve in compliance with CAA section 112(d)(3), then "EPA is under no obligation to achieve a particular numerical reduction in HAP metal emissions." *Id*.

Similarly, organic HAP is invariably present in THC and the concentrations of THC in the stack are expected to be in line with the concentrations of organic HAP.

Comment 2:

[1631] Commenters stated that the Agency's proposed limits for COS and CS_2 are unnecessary because sinter/recycling plants are subject to existing VOC and oil-content limits that address all organic compounds. As EPA explains: "The oil limit, and the alternative VOC limit, serve as surrogates for all organic HAP." The commenter stated that they believe that a limit on oil content is the only feasible way to ensure that all plants achieve the MACT level of control for organic HAP from the sinter plant windbox exhaust. For instance, COS and CS_2 both contain carbon, thus limiting VOC and oil content can reduce formation of these compound as, for example, sinter oil is a source of carbons, and an oil-content limit mitigates one of the precursors of COS and CS_2.

Response 2:

As explained in the preamble and in other EPA responses in this RTC document, we conclude that it is appropriate to establish HAP specific limits for COS, instead of relying on the VOC or oil limit as surrogates (previously used in the NESHAP). The EPA is not finalizing a numerical standard for CS_2 as discussed in the response to Comment 10 of this section.

Comment 3:

[1631] Commenters stated that the Agency has not properly considered surrogates for its proposed HCl and HF limits and they should be investigated further. For instance, sulfur dioxide (SO_2) and particular design elements may maintain these pollutants at current limits.

Response 3:

The EPA is not obligated to consider surrogates, though we may consider them at our discretion. As discussed in the response to comment 1, the D.C. Circuit in *National Lime Ass'n v. EPA*, 233 F.3d 637 (D.C. Cir. 2000) stated that the EPA "may use a surrogate to regulate hazardous pollutants if it is 'reasonable' to do so." As the HCl limits are measurable and, for these sources, and we have no information to suggest that precursors of either pollutant are related to precursors to the sulfur compound the commenter suggested as a surrogate, the appropriateness of this surrogate is not demonstrated. As noted in previous responses, the numerical stand for HF is not being finalized. The EPA is making no further changes to the final rule as a result of this comment.

Comment 4:

[1592] Commenters stated that the Agency recognizes, but fails to account for in the proposed rule, that PM2.5 is a surrogate, or carrier, for HAPs, including toxic metals.

Response 4:

The record reflects that PM controls are the only approach sources use to reduce non- mercury metal HAP, and the EPA knows of no way to selectively control specific non-mercury metal HAP. The use of PM as a surrogate ensures that non-mercury metal HAP is indiscriminately controlled along with non-metal HAP PM.

Comment 5:

[1597] Commenters stated that the basis for the HAP/PM Factor for slag is based upon a 1977 EPA report that is outdated and current data should be gathered and used in this analysis. Commenters stated that the EPA used a HAP/PM Factor for slag handling and storage of 0.034 in this rulemaking, but this factor is based on a 2019 study to develop emission estimates for fugitive and intermittent HAP emission sources for an example II&S facility for input to the RTR risk assessment. According to the source document, Table 8, Page 13, the Sum HAP/PM Ratio for slag pits is 0.0042. As a result, it appears that the potential HAP emissions are overestimated by a factor of 8 in the subject rulemaking.

[1597] Commenters stated that the EPA has overestimated the emissions of PM and HAP associated with the handling, storage and processing of BF and BOPF slag. Commenters stated that before proceeding with the proposed regulation of slag operations, the EPA must collect and utilize accurate emissions data, rather than relying on surrogates to characterize the emissions from slag handling, storage, and processing.

Response 5:

EPA has identified slag handling, storage, and processing operations as a previously unregulated source of HAP emissions. Therefore, pursuant to the LEAN decision and CAA section 112(d)(2)/(d)(3), EPA is establishing emissions standards for this previously unregulated source. In this action, EPA is promulgating an opacity limit of 10 percent, which we conclude represents the MACT floor level of performance, which is the minimum stringency allowed by the CAA section 112(d). The ratio of PM to HAP has no effect on the determination of the final standard. Therefore, whether EPA uses the ratio of 3.4 percent versus 0.42 percent would not affect the final emissions standard.

5.4 Potential D/F and PAH limits based on addition of ACI

Comment 1:

[1631] Commenters stated that the Agency's presumed D/F control efficiencies of 90% and 98% with ACI in its RIA are not supported by relevant testing data and remain unproven for sinter/recycling plants. If the Agency is overestimating D/F control efficiencies, that would lead to underestimated cost-effectiveness values for ACI, meaning ACI appears more cost-effective than it should in the existing analysis.

Response 1:

As explained in the technical support memoranda, which are available in the docket, for the final rule, we made some adjustments based on public comments and further investigation of this issue. Based on this effort, we now estimate that the ACI would achieve 70 percent reduction, instead of 90-95 percent.

Comment 2:

[1631] Commenters stated that the Agency is significantly underestimating the total capital and annualized cost of ACI and should recalculate its estimates. The Agency must seek quotes or other current pricing information for ACI systems, installation, utility, reagent, labor, and other operating cost categories to reflect more accurate capital and annual operating costs. The

Agency's cost estimates underestimate the capital recovery factor and annualized capital costs. The cost estimates assumed an unrealistic interest rate of 5%, whereas current rates are closer to 8.5%. The Agency should recalculate the annualized capital costs using a more realistic interest rate. Commenters stated that the Agency adjusted costs for inflation using EPA's GDP cost escalation methodology, which does not appropriately estimate the impact of inflation on capital costs, nor does it appropriately address operating costs. The Agency needs to use well-known and established indices, such as the Chemical Engineering Plant Cost Index (CEPCI) to account for inflation in its equipment costs estimates. By using GDP scaling rather than an index like CEPCI, EPA has not properly adjusted its costs to account for inflation in both its capital cost and operating cost estimations.

Response 2:

The EPA has a legal obligation to proceed with regulatory action based on the best available data and tools. As described in the proposed rule preamble (88 FR 49402, July 31, 2023) and final rule preamble and technical memorandum cited in the preambles, EPA gathered a substantial amount of data and information to inform the development of the proposed and final rules. The data included many emissions tests based on EPA approved methods for several HAP. The EPA also gathered a substantial amount of data and information regarding opacity readings and work practices being employed in the industry. Regarding tools, the emissions limits were derived using the UPL methodology, which is a well established methodology to establish appropriate MACT emissions limits. Other tools included EPA's Cost Manual and various emissions factors. More details regarding the data and tools are described in the technical memoranda and other technical documents cited in the proposed rule preamble (88 FR 49402, July 31, 2023), and/or final rule preamble.

5.5 Current sinter plant oil content limit

Comment 1:

[1631] Commenters stated that changes to the existing MACT standards for sinter/recycling plants are not necessary. The commenter said that existing VOC and oil-content standards sufficiently limit D/F and PAH emissions from sinter/recycling plants. The commenter said that the Agency appropriately determined that oil-content and VOC limits should be used as a surrogate to regulate D/F and PAHs emissions from sinter/recycling plants in the original NESHAP and that nothing has changed to invalidate this analysis. The commenter stated that EPA is unable to point to anything that shows that the use of VOC and oil-content limits as surrogates is no longer appropriate for sinter/recycling plants, much less that it is now necessary for EPA to revise how it regulates D/F and PAHs. Commenters stated that should EPA nonetheless continue to pursue a path of establishing separate D/F and PAHs limits for sinter/recycling plants, any limits issued must be adjusted upward to account for variability inherently lacking in the limited dataset used to establish proposed standards.

Response 1:

See Response to Comment 6, Section 1.1 We agree that the revised standards for D/F and PAHs for sinter plants are not required under the *LEAN* decision. However, we disagree with the comments regarding CAA section 112(d)(6). We conclude that it is appropriate to finalize

revised standards for D/F and PAHs for sinter plants pursuant to CAA section 112(d)(6) because the data we collected and analyzed support establishing pollutant specific emissions limits for D/F and PAHs to replace the use of VOC or oil content in the sinter feed as surrogates as was the case in the NESHAP prior to the finalization of this current rule. We conclude that establishing specific limits for PAHs and D/F are improvements to the NESHAP based on the available data and reflect developments in practices, processes or technology pursuant to CAA section 112(d)(6). The data and calculation of the emissions limits are described in the following two technical documents: *Point Source Data Summary for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF* and the *Maximum Achievable Control Technology Standard Calculations, Cost Impacts, and Beyond-the-Floor Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF* which are available in the docket for this final action.

6. Proposed compliance dates

Comment 1:

[1631; 1575] Commenters were split on the 2023 Proposal compliance dates. Commenters seemed confused with the proposed compliance date of one year after the compliance date for opacity standards and WP standards to address fugitive emissions from five UFIP source types. In addition, commenters expressed concern over the timeline to conduct initial performance tests and requested confirmation of a 180-day period after the compliance date to complete performance testing as opposed to within 180 days of the promulgation date. They did not read the proposed language to accelerate the otherwise-applicable 180-day period after the compliance date (i.e., one year after publication of final rule in the FR) for completing performance testing. They voiced if this does accelerate that requirement, in addition to extending the compliance date, the 180-day period, which has applied in every other MACT, should be maintained absent some explanation (and a new proposal providing the same) as to why this source category should be expected to complete performance testing simultaneously with the compliance date. They stated this would effectively require compliance to be achieved earlier than the compliance date in the 2023 Proposal because of the time required to get performance testing completed. Commenters in agreement with the Agency stated that the proposed changes to regulations and WPs should be implemented as suggested to ensure that the expected reduction in air pollutant is achieved for particulates (and metals) as well as other hazardous emissions such as dioxins. Commenters agreed the EPA should enact the requirements within the proposed timeline of one year after publication of the final 2023 Proposal.

Response 1:

As explained in the preamble for the final rule, after reviewing and considering public comments, we are finalizing the following compliance dates: 12 months after final rule publication date (i.e., promulgation date) for the opacity limits and work practices for three UFIP sources (planned openings, bell leaks, and BOPF shop); 24 months after final rule publication date (i.e. promulgation date) for the work practices for three UFIP sources (unplanned openings beaching, and slag processing); one year after the promulgation of the fenceline method for metals or two years after the promulgation date of the final rule, whichever is later, for the

fenceline monitoring requirements; and three years after the promulgation date of the final rule for the numerical MACT emissions limits for sinter plants and furnaces.

6.1 Feasibility of compliance periods

Comment 1:

[1631] Commenters stated the EPA has provided insufficient time to install and begin operating a fenceline monitoring program. They said the proposal would require fenceline monitors to be installed and operational within only one year following promulgation of the sampling method. Commenters stated the Agency anticipates that the monitoring will need to begin in 2026. The Commenters state the 2023 Proposal provides insufficient time for facilities to procure, install, and begin operating a fenceline monitoring program as proposed, especially when facility-specific monitoring plans will need to be submitted and approved by the Agency. Commenters stated the monitoring plan development and submittal will require more than six months because facilities will be required to understand the promulgated method, order appropriate equipment, select contractors, and understand the proper operation of the equipment to develop monitoring plans. Commenters stated the overall costs will necessitate time for approvals of capital expenditures. They cannot order equipment until the monitoring method is promulgated, and the equipment may not be readily available that complies with the promulgated monitoring method. Commenters indicated that once equipment is ordered, facilities are not able to guarantee delivery timelines from equipment suppliers, and supply chain disruptions continue to cause delays. They indicated the equipment is onsite, facilities will need time to upgrade wiring, ensure a power supply, install equipment, make improvements to fencelines, construct access roads, add fencing, and make drainage improvements, which may require additional permitting and approval. Commenters indicated that once the equipment is installed, facilities need sufficient time to train equipment operators on proper operation of the equipment. Commenters estimated to adequately implement a monitoring program will take at least three years from the date of method promulgation.

Response 1:

As explained in the preamble and in the EPA response to the previous comment, for the final rule, after reviewing and considering public comments, we are finalizing a compliance date for fenceline monitoring of one year after the promulgation of the fenceline method for metals or two years after the promulgation date of the final rule, whichever is later.

Comment 2:

[1631] Commenters stated the initial compliance schedule of 12 months after promulgation is insufficient for industry to develop and implement a furnace-specific slip avoidance plan. They indicated that the 2023 Proposal would require compliance with the WP standards for unplanned pressure relief devices (PRD) openings within 12 months after promulgation. They offered the following example: before a facility could initiate construction to install a screening process for BF raw materials (if required), a minor New Source Review (NSR) construction permit will be required in most states. They indicated that the EPA is aware, minor NSR permits typically take 6 months to a year (or longer) to issue, and this does not count the time for designing equipment, preparing permit applications, and then installing the equipment. Commenters expressed that the

estimated PM2.5 potential emissions could exceed the 10 tpy significance level, meaning that the change could trigger major NSR permitting, and these permits can take longer than one year. Commenters indicated that if the area is in attainment, the PSD program's air modeling requirements would need to be addressed, all of which involves substantially longer periods of time than one year. They stated that almost all II&S plants are in a current attainment area for PM2.5, although not all are, and that could be problematic. Commenters stated that even in attainment areas, there is very little margin to add a PM2.5 source, and passing a model without a hot spot may be problematic, particularly with EPA pursuing a more stringent PM2.5 NAAQS, obtaining a permit can become even a more significant challenge. Commenters expressed concern that there is very little headroom between the NAAQS and current air quality readings, meaning that demonstrations for each plant regarding noninterference with attainment could be required by the state permitting authorities pursuant to EPA's approved SIPs in the areas. They stated if the EPA issues a more stringent PM2.5 NAAQS, these timelines would be extended.

[1631] Commenters stated that any WP not already in place at a particular BF are expected to require iterative operating trials and potential engineering studies to establish operationally acceptable operating parameters such that VE performance is optimized during planned PRD openings without incurring adverse effects on safety and furnace operations. They stated depending on operating schedules and planned and unplanned furnace downtime, it would not be unreasonable to estimate up to a year to complete these necessary evaluations. Commenters stated the final 2023 Proposal should allow a full three years for facilities to come into compliance with the WP standards required for unplanned PRD openings.

Response 2:

As explained in the preamble for the final rule, after reviewing and considering public comments, we are finalizing the following compliance dates: 12 months after final rule publication date (i.e., promulgation date) for the opacity limits and work practices for three UFIP sources (planned openings, bell leaks, and BOPF shop); and 24 months after final rule publication date (i.e. promulgation date) for the work practices for three UFIP sources (unplanned openings, beaching, and slag processing).

Comment 3:

[1631] Commenters stated the proposed compliance dates for the new speciated numerical HAP limits are based on the unsupported assumption that no new controls will be needed for compliance. They said according to the EPA's Table 5 in the 2023 Proposal, existing affected sources would be required to comply with this range of limits within six months of promulgation, (i.e., by September 10, 2024), less than a year from now, assuming a March issuance date (which is currently pending before the court in the ENGO deadline suit).

Response 3:

As explained in the preamble for the final rule, after reviewing and considering public comments, we are finalizing a compliance date of three years after the promulgation date of the final rule for the numerical MACT emissions limits for sinter plants and furnaces because of the uncertainties and concerns expressed by commenters.

Comment 4:

[1631] Commenters stated the EPA needs to address implementation and compliance schedule concerns. They stated the 2023 Proposal calls for compliance with the proposed existing source limits within six months of a final rule. Commenters indicated that because the proposed limits would require installation of pollution control technology, facilities need a compliance date that is at least the three years available pursuant to CAA Section 112(i)(3)(A) after a rule is finalized, to provide industry needed time to evaluate, design, and install additional control technology to ensure that the limits can be met over the range of anticipated operating conditions. Commenters asserted that more specifically, the following would need to be undertaken prior to being able to ensure compliance with the proposed limits:

- Additional stack testing to better determine variability;
- Technology review and selection;
- Pilot or slip-stream testing;
- Site-specific engineering and planning;
- Equipment design;
- Equipment fabrication and delivery;
- Increased demand raising costs;
- Increased demand tying up niche contractors that serve the industry;
- Construction and site-specific modification; and
- Shakedown of new equipment.

They estimated installation of air emission controls will take upwards of five years. Commenters indicated that the EPA is not responsive to this issue to state that regulated entities can begin evaluating compliance capabilities based on the 2023 Proposal. Commenters stated that because of the significant flaws in the proposed limits, the mix of limits that ultimately may be promulgated by the EPA is not at all certain and therefore cannot be reasonably evaluated. They stated tradeoffs between various pollutants as well as the impact of potentially more or less stringent limits in what is ultimately finalized means that Industry Commenters cannot reasonably plan for compliance now.

Commenters indicated that the EPA has solicited comment on whether an averaging compliance alternative should be considered for the NESHAP to demonstrate compliance with the limits and if so what types of alternatives should be considered. They generally endorse an averaging compliance alternative as averaging usually improves cost effectiveness.

[1595] Commenters stated the EPA should extend compliance dates and expressed concern that the EPA breaks from common past practice of providing a three-year timeline for a MACT. They said instead, the EPA proposes a maximum of one year for facilities to comply with these more stringent standards. Commenters communicated that while compliance under some of the proposed amendments may be relatively short, others may take significant engineering analysis and construction with multiple facilities seeking to source technology and expertise from a limited set of providers. Commenters strongly urged the EPA to extend the compliance date well beyond late 2024 due to the sweeping elements of this proposal that will require engineering analysis, construction, and work practice changes.

Response 4:

See responses to the previously three comments.

Comment 5:

[1631] Commenters stated the proposed opacity and WP requirements for BOPF shops are flawed and should not be finalized as proposed. They asserted that if the EPA moves forward with a reduced opacity limit and requirements for WP standards, the initial compliance schedule should be extended due to additional time that would be needed for design and installation of significant, new ventilation systems being retrofitted for existing BOPF shops. They communicated that the EPA proposes one year for BOPF shop compliance with the opacity and WP standards which is unrealistic. Commenters expressed that three years, or even more, will be needed for the steps outlined above. They stated the additional time will be required to retrofit significant new air handling systems and change existing practices. Commenters made know that extensive design engineering, planning, installation of additional control equipment, and operational adjustments need to be accomplished prior to the compliance date. They stated additional time for operational trials to establish appropriate and safe WP operating parameters, and potential instrumentation changes to provide compliance assistance would also be needed. Commenters stated the EPA should limit this rulemaking to LEAN-required elements and should not finalize the proposed opacity and WP provisions at this time. They specified that at a minimum, the EPA must provide a three-year compliance period to allow facilities to comply.

Response 5:

The EPA has removed the updated opacity limit for BOPF shops, while keeping the work practice standards. These standards are expected to require minimal new controls and instrumentation, therefore we are finalizing the compliance schedule for BOPF shops as proposed.

Comment 6:

[1631] Commenters declared the proposed revision of the current 20% opacity limit to a 5% opacity limit for BF casthouse fugitives is flawed and should not be finalized as proposed. They stated the initial compliance schedule should be extended due to additional time needed for design and installation of new controls. They reiterated that the EPA proposes to require compliance with the proposed opacity standard applicable to BF casthouse fugitives within one year of publication of the final rule which is inadequate to allow II&S facilities to undertake all the necessary design engineering, planning, installation of additional control equipment, and operational adjustments needed to ensure compliance with the 2023 Proposal. They said the EPA should not proceed to finalize the proposed opacity provisions with this RTR rulemaking. Commenters indicated that if the agency proceeds to do so nonetheless, EPA must provide a three-year compliance period to allow facilities to comply.

Response 6:

The EPA has removed the updated opacity limit for BF casthouses, therefore we are finalizing the compliance schedule for BF casthouses as proposed.

Comment 7:

[1575] Commenters expressed the proposed changes to regulations and WP should be implemented as suggested, to ensure that the expected reduction in air pollutant is achieved for particulates (and metals) as well as other hazardous emissions such as dioxins. They agreed the EPA should enact them within the proposed timeline of one year.

They stated the proposed revisions to the II&S manufacturing NESHAP included new measures and recommend stricter standards for currently regulated emissions. Commenters communicated that as estimated by the EPA, these recommended measures will reduce hazardous air pollution in a measurable way, at a negligible cost to the facilities.

Commenters stated a critical measure proposed by the EPA is reducing emission opacity to 5%, when compared to the current 20%. They indicated that opacity is roughly correlated to particulate concentration, although it varies with the particulate size, shape, and refractive index. Commenters indicated that combined with the revised WPs, the EPA estimates a reduction in particulate emissions from II&S manufacturing facilities of 2300 tpy, with PM2.5 emissions and of hazardous metal air pollution reduced by 560 and 79 tpy, respectively which represent a reduction of 28% in particulates, 27% in PM2.5, and 28% in hazardous metal air pollutants. They indicated the EPA should include in the regulations all the proposed measures to ensure these outcomes and protect public health.

Commenters stated the EPA is proposing a timeline of one year for facilities to demonstrate compliance, namely, by the end of 2024. Commenters strongly support this timeline, which should be highly feasible: The proposed measures mostly require minor to moderate modification of current work practices rather than necessitating installation of new equipment or major changes and can therefore be implemented within the indicated timeframe.
They indicated the cost of the proposed measures is also negligible (order 0.01%) when compared to the sales of the companies impacted by these regulations; therefore, there is no monetary obstacle to implementation. Commenters noted that at the same time, the benefits to public health are high.

Commenters reiterated that there is no reasonable obstacle to the rapid implementation of all proposed revised regulations, in the one-year timeframe proposed.

Response 7:

As described in previous comments above, we revised some of the standards for UFIP sources based on public comments and to account for variability and other factors. Nevertheless, we still estimate that these standards will achieve significant reductions of HAP emissions from these sources in a timely manner.

Comment 8:

[1631] Commenters stated the EPA should allow for a full three years for slag operations to come into compliance with the proposed opacity standard. Commenters said the EPA proposes one year for the slag handling operations to come into compliance with the opacity standard which is unrealistic. They stated that three years, or even more, would be necessary to construct enclosures and undertake other measures in an effort to reduce particulate and HAP emissions to a sufficient level to attempt to meet the 5% opacity limit (although there are no assurances that

this low level could ever be achieved at all times and under all circumstances). They stated the additional time will be required to retrofit significant new air handling systems and change existing practices. Commenters stated extensive design engineering, planning, installation of new air handling and control equipment, and operational adjustments need to be accomplished prior to the compliance date. They indicated that at a minimum, the EPA must provide a three-year compliance period to allow facilities to comply.

Response 8:

As explained in the preamble for this final rule, we are finalizing an opacity limit of 10 percent instead of 5 percent. Despite this change, we are finalizing a compliance period of 24 months after final rule publication date (i.e., promulgation date) for slag processing.

6.2 Impact on current emission reduction initiatives by industry

Comment 1:

[1597] Commenters stated this 2023 Proposal effort included the creation of an emission reduction factor that gave credit to facilities that, in the case of slag processing, used either water sprays or fog spray systems. They restated that an emission reduction factor of 25% was allowed for facilities that use either of these technologies, with a compounded reduction of 50% if both were used. They indicated that these emission reduction factors are extremely conservative and not based upon any research or data analysis.

Commenters stated the basis for the HAP/PM factor for slag is based upon literature slag data and BF tests (EPA, 1977). They indicated that the data in the 1977 EPA report is outdated, and current data should be gathered and used in this analysis. They reiterated that the EPA used a HAP/PM factor for slag handling & storage of 0.034 in this 2023 Proposal. They stated the source of this data is a 2019 study to develop emission estimates for fugitive and intermittent HAP emission sources for an example II&S facility for input to the RTR risk assessment. Commenters stated that according to the source document, the sum HAP/PM Ratio for slag pits is 0.0042. They said as a result, it appears that the potential HAP emissions are overestimated by a factor of eight (8) in the subject rulemaking. They indicated the EPA has overestimated the emissions of PM and HAP associated with the handling, storage and processing of BF and basic oxygen furnace slag. They stated that before proceeding with the proposed regulation of slag operations, the EPA must collect and utilize accurate emissions data, rather than relying on surrogates to characterize the unique, intermittent, and unmeasurable emissions from slag handling, storage, and processing.

Response 1:

EPA has identified slag handling, storage, and processing operations as a previously unregulated source of HAP emissions. Therefore, pursuant to the LEAN decision and CAA section 112(d)(2)/(d)(3), EPA is establishing emissions standards for this previously unregulated source. In this action, EPA is promulgating an opacity limit of 10 percent, which we conclude represents the MACT floor level of performance, which is the minimum stringency allowed by the CAA section 112(d). The ratio of PM to HAP has no effect on the determination of the final standard.

Therefore, whether EPA uses the ratio of 3.4 percent versus 0.42 percent would not affect the final emissions standard.

7. Cost, Environmental, and Economic Impacts

7.1 Air quality impacts

Comment 1:

[1631] Commenters stated the EPA fails to use the best information available and makes several incorrect assumptions when estimating emissions from the seven UFIP source types, which also affects the Agency's estimates of emission reductions. They stated in estimating the rate at which emissions would be reduced by complying with the proposed opacity and WP standards, the EPA relied on the Agency's own unsupported engineering judgment without technical support or justification. They stated the EPA cannot merely speculate regarding the effectiveness of various types of controls but instead must take into account the analysis provided in these comments. They further stated, as described in industry's UFIP Memorandum and UFIP Cost Calculations, included as Appendix A, the data presented demonstrates that many of the EPA's unjustified assumptions regarding control efficiencies are incorrect, which in turn have significant, profound implications for whether the EPA's 2023 Proposal can possibly be said to be a product of reasoned decision-making. Commenters stated industry used the EPA's control efficiency estimates in their emissions analysis in Appendix A only to demonstrate the differences in the underlying emission factors and HAP/PM ratios and in one case correct a material throughput value. Commenters did not concede that the EPA's assumed control efficiencies are correct, and some industry comments demonstrated that they are incorrect.

[1631] Commenters stated to the extent that the EPA's estimated reduction rates prove to be inaccurate, there are severe implications for the cost-effectiveness rates that the EPA relies on to justify the reasonableness of the 2023 Proposal, for example, the EPA assumes the proposed WP for a BOPF shop can achieve a reduction of 20 percent in fugitive HAP emissions (2023 UFIP Memo). Commenters stated the EPA established the assumed 20 percent rate of reduction for BOPF shops without any third-party engineering studies or technical support, and with nothing more than the EPA's alleged engineering judgment at best. They stated the EPA further asserts that the same level of control is achievable at each unique site without providing any analysis or demonstration of the comparability of the facilities. Commenters indicated as reflected in Industry's UFIP Memorandum included as Appendix A, the EPA's assumptions are indeed incorrect, and a 20 percent reduction in fugitive HAP emissions would not be achievable even if a BOPF shop were in full compliance with the opacity and WP standards. They stated that in any specific case the cost-effectiveness rates are half as effective as the EPA suggests in the preamble, the projected particulate HAP emission reductions (and PM2.5 emission reductions) would likewise be halved. They stated the EPA needs to take into account the compounding and cascading effect of each practice's overall reduction estimates and ultimately reconsider the estimated cost-effectiveness rate with a more sound and more scientific basis.

[1631] Commenters stated when emission factors like these for UFIP sources lack objective direct measurement, such as through stack testing, the engineering judgement of experienced and knowledgeable individuals can differ materially. They stated a document in the docket for this

2023 Proposal illustrates this directly in a rather simplistic fashion where the EPA's and Industry's emissions factors are shown side by side and differ significantly for the same UFIP source category. Commenters believed that their operational experience over many, many decades and their diligence used in developing II&S specific emissions factors should be given more credence.

[1631] Commenters stated the EPA compounds this problem by relying on poor quality emission factors and/or pure engineering calculations, as explained in more detail above and in Industry's UFIP Memorandum included as Appendix A. They stated by using such uncertain methods to estimate emissions, the EPA indeed overstated baseline emissions and emission reductions. They asserted while it is true that quantification of these emissions is difficult, that is the point: the EPA portraying emissions estimates as an absolute fact in the Agency's analysis fails to account for the challenge of quantification. Commenters stated there is no basis for these assumptions outlined in the record, and they are not correct. The EPA has thus oversimplified this element of the Agency's analysis.

[1631] Commenters stated the EPA's estimates of HAP reductions may be overstated by 50 percent or more, which would lead to an overestimate of HAPs reduced by 100% as well as a 100% underestimate of the cost-effectiveness rates. Commenters stated the EPA's estimation approach, which is not verifiable, does not on its own create certainty, and the EPA has not established special agency expertise for creating this type of estimate. Commenters stated that here the expertise lies with the entities that operate the facilities, not with the EPA, yet the EPA relied on the Agency's estimated emissions and emission reductions to calculate cost-effectiveness rates. Commenters claimed by overstating emissions and emission reductions, the cost-effectiveness rates are artificially low and quite misleading. They stated the EPA must take into account the errors that industry identifies herein, recalculate the emissions from UFIP sources, and develop more reasonable emission reduction factors based on technical support and engineering analyses. They stated these corrected emissions and emission reduction estimates must also be taken into account when considering the reasonableness and economic feasibility of the proposed opacity and WP standards, until then, these proposed standards should not move forward.

Response 1:

The EPA thanks the commenters for reviewing and providing comments on the emissions data. The EPA checked the emissions data used to calculate both the baseline and the emissions reductions and corrected the errors mentioned by the commenters. We agree with the commenters that the HAP emission reductions were initially overestimated. In response to industry comment, the EPA recalculated the baseline HAP emissions and the expected HAP emission reductions. Data regarding which work practices are in use by each facility in response to the section 114 collection were used to revise baseline emissions. We used engineering judgement to estimate the emission reductions for each work practice standards. If a facility is already using a work practice standard that is expected to result in decreased emissions, that emissions decrease was applied to the baseline emissions for that facility. This resulted in a more informed estimate of the industry's baseline HAP emissions. Emission reductions were then recalculated to exclude any reductions from work practices that are already being utilized by facilities and were accounted for in the baseline emissions calculations. As a result, the

calculated emission reductions now more accurately reflect the work practices that would need to be implemented by each facility to meet the rule. This also caused the cost per ton of HAP removal to increase, but should be more accurate than the initial estimates. We also note that, although the commenters are correct that the revised emissions data does impact the estimated cost effectiveness, the revised cost effectiveness values are still reasonable, and cost effectiveness values are not the sole criteria for consideration and finalization of standards.

Comment 2:

[1489] Commenters communicated one thing that comes to mind and that directly impacts our business is casting of steel and all other metals that are typically done at the same places that are impacted by this 2023 Proposal. Commenters affirmed that there are less than 10 businesses in the entire continental USA where they are able to get anything casted or forged at, which ultimately means they will have to raise prices to the federal government, or if you don't do business with the federal government, most places go to China, India or Pakistan to accomplish this. They stated ironically none of those countries have any regulations on steel or iron mills at all, and generally despite what their government wants to put out, they go wide open especially for critical businesses and infrastructure like iron and steel mills. Commenters further stated that to power these factories and plants, ALL three (3) countries are building brand new bigger than ever coal fired plants that have no to minimal filters on the output side of things. They expressed that this means when the EPA tries to reduce localized pollution by these standards, the Agency is hurting everyday American Workers including union workers, disadvantaged populations such as the Black American and/or Native Indigenous American communities and other groups of Americans who struggle to survive.

Commenters stated that additionally, the Agency has not reduced the actual pollution rate, the EPA is increasing the pollutant rate by double because those countries have no regulations on emissions, the countries just don't care, and nothing said or done will ever change that. Commenters stated that before you ask for proof, all you need to do is go visit unannounced to the factories in those countries in question and just observe, then regulators will see and record what commenters are speaking about.

Response 2:

As part of the EPA's analysis of the economic impacts of the rule, compliance costs were compared to costs for each domestic producer of iron and steel. The results and summary of that comparison are included in the regulatory impact analysis of the rule. With annual compliance cost estimates ranging from 0.017% (U.S. Steel) to 0.022% (Cleveland Cliffs) of annual revenue, the rule is not expected to result in significant changes to the trade composition of the market. Therefore, the EPA anticipates that the rule will result in emission reductions similar in scale to those stated.

Comment 3:

[1592] Commenters stated that as part of their volunteer work for Sierra Club to protect the natural environment and the public health in southwest Ohio, they review and investigate reports of pollution and air pollution data and records. They have spent hundreds of hours over the past five years, including in person in Middletown, investigating and documenting adverse impacts

from the Middletown Works' air pollution that has plagued Ms. Ballinger and her community. Commenters have experienced firsthand, and been exposed to, the waves of noxious plumes and clouds of air pollution, including PM2.5, from Middletown Works. They have reviewed Middletown Works' air pollution data (e.g., the State of Ohio's air monitoring data, EPA's Toxic Release Inventory data, and the facility's emission reports) and data from other facilities in southwest Ohio which show that Middletown Works is one of the largest contributors of air pollution in Butler County (where the facility is located), and the plant's pollution extends into adjacent Hamilton County. Commenters have also reviewed federal air data showing concentrations of criteria pollutants at the local level as compared to nation- and state-wide concentrations which show Middletown is in the top 5 to 10 percent for greatest (most elevated) concentrations of PM2.5 in the US as of February 2022. Commenters stated that quite simply, there is no better example of the impact of HAPs on an overburdened community than the emissions from Middletown Works.

[1592] Commenters stated making matters worse, in 2020 the EPA removed the Ohio Air Nuisance Rule (ANR) from the Ohio State Implementation Plan (SIP). They asserted that for nearly five decades, the ANR served as a tool that Ohio residents could use to require facilities to control air pollution directly at the source, yet that tool was taken away from Ohio residents. Commenters indicated the ANR removal was remanded back to the EPA, as part of a Sixth Circuit challenge brought by Ms. Ballinger, Ms. Wall, and environmental groups, and is under review by the EPA. [Sierra Club v. United States EPA, 60 F.4th 1008 (6th Cir. 2023)] Commenters requested that in addition to strengthening the proposed NESHAP rule at issue in this 2023 Proposal, the EPA fully restore the ANR to the SIP so that residents will have the tools necessary to protect themselves from criteria pollutants and HAPs.

[1592] Commenters stated despite theirs and other community members' repeated (and consistent) reports of nuisance air pollution to the Ohio EPA, the Ohio EPA does not timely respond—even when multiple reports are made simultaneously—and has never required a stop to the pollution that threatens the community members' health and damages their properties. The Ohio EPA has failed to identify and remedy the direct and documented impacts of air pollution to the commenters health and welfare. Additionally, the EPA's legally-clouded removal of the Ohio Air Nuisance Rule from the Ohio State Implementation Plan exacerbates the harm caused by the Ohio EPA's inaction.

[1592] Commenters stated in recent years, nearly continuous waves of plumes and clouds of air pollution, including PM2.5, from Middletown Works have become much more severe, defiling their environment, and depriving their safety and security at home. Commenters stated that exposure to air pollution from Middletown Works causes difficulty breathing, burning of their eyes, nose, and throat, coughing, respiratory problems, headaches, and nausea. Commenters regularly monitor for PM2.5 through the use of a personal handheld air monitoring device that directly measures PM2.5 concentrations in the air where they live. On hundreds of occasions, they have measured acutely elevated concentrations of PM2.5. Commenters are greatly worried about their exposure and their families' and friends' exposures to air pollution, including respirable particulate matter.

[1496] Commenters stated the proposed rule will not make any discernible impact on the adverse impacts the Cleveland-Cliffs' Middletown Works factory has had on the health and welfare of this community. Making matters worse, the EPA removed Ohio's Air Nuisance Rule (ANR)

from the state implementation plan in 2020 eliminating a tool that people were seeking to use in Middletown to address this chronic and very hazardous pollution.

[1496] Commenters stated the proposed NESHAP will only result in a nationwide decrease, across all facilities, of 560 tons per year of PM2.5. In 2020, Cleveland-Cliffs emitted 274 tons of PM2.5 into the Middletown community. The high levels of annual PM2.5 emissions from this single facility shows how insignificant and non-protective the proposed NESHAP is. Particulate matter consists of or carries numerous hazardous chemicals and metals with it and is so small it penetrates the lungs into the bloodstream. The commenter urged the EPA to strength the proposed rule and the ability of both the agencies and residents to ensure the rules are both enforceable and the health and welfare of residents is assured.

Response 3:

The EPA acknowledges the commenters' concerns regarding air pollution emissions and exposure in this community. Any issues with Ohio's ANR rule cannot be addressed in this rulemaking and must be separately addressed by other programs at the EPA.

Comment 4:

[1575] Commenters strongly support the 2023 Proposal and provided the following list of comments and/or concerns pertaining to air quality impacts:

- II&S manufacturing facilities contribute greatly to HAPs in neighboring communities. The proposed changes to regulations and WP would reduce these emissions and improve the health of the public, especially disadvantaged and vulnerable populations such as children. The EPA should enact all the proposed changes with the indicated timeline of one year.
- II&S manufacturing facilities emit large quantities of air pollutants. For example, in 2017 the Edgar Thomson Steel Works/Mon Valley USS facility in Braddock, PA emitted large quantities of pollutants regulated by the NAAQS due to their harm to public health: approximately 63 tons of fine particulates- PM2.5 (amounting to 10% of the entire region's emissions), 1317 tons of NOx (26% of the region's total), and 1260 tons of SO2 (27%). Fine particulates, which are a significant fraction of II&S manufacturing air pollution, have been clearly linked to increased mortality, cardiovascular and respiratory diseases. The particulates emitted from II&S manufacturing are especially hazardous due to their high content of toxic metals.
- The emissions from II&S manufacturing substantially contribute to the poor air quality in their regions and affect the air quality in adjacent communities. One such example is that of fine particulates (PM2.5). The EPA's air monitor in North Braddock (40.402328, -79.860973), which is approximately a half a mile from the Edgar Thomson US Steel Works recorded the following fine particulate (PM2.5) annual average values during the 2015 through August 15, 2023 timeframe: An annual average PM2.5 (ug/m3) value ranging from 11 to 9 was recorded. The lowest recorded value of 9 correlates with reductions in air pollution throughout the USA due to the effects of COVID19.
- These annual average PM2.5 concentrations in North Braddock are below the current NAAQS value of 12 ug/m3. However, the concentrations exceed the EPA's proposed revised NAAQS for PM2.5 of 9 to 10ug/m3, derived from updated information on the

health impacts of PM2.5. Clearly, people in the vicinity of Edgar Thomson US Steel Works are exposed to PM2.5 levels that are now considered harmful.

- Particulate emissions from II&S manufacturing (both PM2.5 and larger PM10) contain substantial levels of toxic metals. As a result, they are especially hazardous to public health. Ambient and maximal metal air concentrations measured by the Allegheny County Health Department (ACHD) in North Braddock show high levels of metals carried on PM10 when compared to a control location, Lawrenceville PA. Based on the comparison of North Braddock and Lawrenceville provided in tabular format, the average and maximum recorded (ng/m3) concentrations of As, Cd, Cr, Mn, Ni, and Co indicate much higher concentrations of As, Cd, Cr. Mn and Ni at the North Braddock location than the control.
- The adverse effects of these metals on human health are well documented in the 2023 RIA. Clearly, people in the vicinity of Edgar Thomson US Steel Works were exposed to higher concentrations of metal air pollution when compared to a community without a neighboring steel making facility, and this may produce health impacts.
- Lead, another metal component of air pollution emitted by II&S manufacturing, is considered so harmful and pervasive that it is the only metal regulated by a NAAQS. The data collected by ACHD shows that lead values in North Braddock are much higher than those recorded in the control location of Lawrenceville.
- Lead concentrations in North Braddock are below the NAAQS limit of 150 ug/m3 (3-month average). However, the Centers for Disease Control and Prevention (CDC) determined that there are no safe levels of lead, especially for children. This is supported by numerous studies. Moreover, lead exposure through different routes is cumulative. Pennsylvania has a high rate of lead exposure from non-air sources, as does the Pittsburgh region. Inhalation of high lead levels, even if they are below the NAAQS value, contribute to its accumulation in children and the resulting adverse health effects that can persist throughout their lifetime.
- The population affected by the pollution emitted by II&S manufacturing is especially vulnerable as defined by EJ indicators: 44% of North Braddock population are Black residents and 26% are below the poverty line. In comparison, the Commonwealth of Pennsylvania has 12% Black residents, and 12% population in poverty. The EPA acknowledges that the disproportionate impact of II&S manufacturing on EJ pollution must be addressed.

Response 4:

The EPA thanks the commenter for their support of the rulemaking. We also acknowledge the air statistics related to II&S manufacturing facilities provided by the commenter.

Comment 5:

[1575] Commenters stated the impact of HAPs from II&S manufacturing facilities extends well beyond directly adjacent communities. They stated even if other manufacturing facilities also contribute to regional pollution, this does not exempt II&S manufacturing facilities from reducing their share of HAPs. Commenters asserted that Allegheny County has high levels of air pollution contributed to by a number of large facilities, but emissions from Edgar Thomson Steel Works (USS) are responsible for a substantial fraction of HAPs, distributed over a large area.

Commenters provided data from the EPA Liberty/ACHD monitor (40.326434, -79.861323), approximately 5 miles from the Edgar Thomson Steel Works, which recorded ambient metal levels, both average and maximum recorded values (ng/m3) of As, Cd, Cr, Mn, Ni, Co, and Pb even higher than those recorded in North Braddock.

Commenters stated the NOAA HYSPLIT dispersion model is a broadly utilized tool to assess air pollution spread over space and time. These commenters modeled air parcel dispersion to assess geographic distribution of pollution plumes from different facilities in Allegheny County, using HYSPLIT. Commenters applied HYSPLIT to plumes from Edgar Thomson Steel Works which yielded a widespread particulate dispersion for a typical winter day (Jan 17, 2023) and a similar map for a summer day (7/24/2023). Commenters presented maps that show the concentration of particulates in each location as a fraction of the concentration at the source based on modeling conducted assuming constant emission of 2500 'air parcels' that can represent either gas emissions or particulates. They stated that here the emissions represent particulates (see HYSPLIT manual for details) released hourly over the simulation duration, tracked for 24 hours, representing an estimated upper bound on pollutants' significant presence in the air. Commenters stated the meteorological data used to run the HYSPLIT model in all cases was HRRR (High Resolution Rapid Refresh), a meteorological model provided by the National Oceanic and Atmospheric Administration (NOAA). They stated these static pollution exposure maps (and daily animated plumes at https://plumepgh.org), show plumes from Edgar Thomson Steel Works can extend over large distances. They indicated that the concentration levels shown represent the fraction of the source concentration, that cannot be directly linked to a specific value; however, the plumes demonstrated the broad area that may be affected by pollution from this facility. Commenters reiterated that the adverse health effects of air pollution in Allegheny County is well documented: For example, ACHD reports that 10% of adults in the county have asthma, when compared to a national average of 8%. They stated children are especially vulnerable and that children in the region are more likely to need emergency room care or be hospitalized for an asthma attack, when compared to children in other communities. Commenters continued that recent research finds that 70% of the Pittsburgh elementary school students surveyed had exposure to PM2.5 greater than 10 µg/m3 and the prevalence of asthma was found to be 22.5%. Commenters indicated PM2.5 was shown to be significantly correlated with odds of asthma, as well as significantly related to the likelihood of uncontrolled asthma.

Commenters stated that one could argue that contrary to pollutant concentrations measured in North Braddock, the air pollution recorded at the Liberty monitor is not solely due to emissions from Edgar Thomson Steel works. They said the HYSPLIT plume modeling of the region shows the combined effect of the three (3) US Steel facilities (Edgar Thomson, Clairton Coke works, and Irvin). Commenters asserted that as noted above, pollutants from Edgar Thomson comprise a substantial fraction of emissions in Allegheny County; therefore, a reduction in emissions from the II&S works will reduce the overall air pollutant levels in the region. They argued that other facilities or industries also contribute to pollution and should not exempt II&S manufacturing from controlling their hazardous emissions. They stated reducing emissions of HAP from II&S manufacturers, especially particulates, would reduce overall pollution in large areas and improve the health of vulnerable populations.

Response 5:

The EPA thanks the commenters for their support of the rulemaking. We also acknowledge the data from the air dispersion modeling related to II&S manufacturing facilities provided by the commenters.

Comment 6:

[1575] Commenters strongly supported the 2023 Proposal reducing opacity limits from 20% to 5%, which is expected to substantially reduce particulate air pollution. Commenters urged the EPA to require all II&S manufacturing facilities to install digital camera opacity technologies (DCOT) and to investigate certification of new digital imaging and analysis technologies due to human-based Method 9 being outdated and open to challenges at this level. They stated camera data should be made available to the public, both for timely alerts of potentially hazardous emission events and in annual reports.

Commenters explained that emission opacity is a direct measure of particulate concentration in a plume. They stated the effects of particulates on mortality and morbidity are well-established and the health impact of particulates from II&S manufacturing facilities is exacerbated by their components, specifically hazardous metals.

Response 6:

The EPA thanks the commenter for their support of the rulemaking. It should be noted that after reviewing comments detailing concerns regarding the proposed opacity limits for BF casthouses and BOPF shop fugitives, the EPA has decided to not make revisions to the existing opacity limits for these sources at this time.

The updated rule allows for facilities the option of monitoring opacity via EPA Method Alt-082 (camera) for work practice standards and the digital camera opacity technique (DCOT) certification procedure outlined in ASTM D7520-16 in addition to EPA Method 9. The EPA disagrees with the commenter that EPA Method 9 should not be allowed for compliance and that DCOT should be required. EPA Method 9 is the promulgated standard method for opacity measurement against which ASTM D7520-16 is assessed, as such it is inappropriate to disallow the use of EPA Method 9.

7.2 Cost impacts

Comment 1:

[1631] Commenters stated the EPA significantly underestimates compliance and economic costs to industry and consumers and fails to compare those costs with the diminished incremental benefits of its proposed controls. They stated the estimated reduction in inhalation-based cancer risk from implementation of the 2023 Proposal, once the appropriate corrections and site-specific data have been accounted for, is approximately 0.1 in a million, a de minimis reduction in risk, especially when compared to the disproportionately high cost of implementing the proposed amendments to the II&S NESHAP. They reiterated the EPA's proposal includes five new opacity standards, over 25 WP proposals for seven nonpoint sources identified by the EPA of emissions, multiple numerical limits for HAPs, and fenceline monitoring requirements.

Commenters stated that the industry analysis conducted by Trinity Consultants by UFIP categories, provided in Appendix K shows that the EPA has significantly underestimated the associated capital and operating costs needed to comply with these many new requirements. They indicated the differences are stark, reflecting the EPA's deficiencies in understanding the complexity and cost implications of 2023 Proposal requirements. Commenters referenced the industry analysis conducted by Trinity Consultants by UFIP categories, the capital costs for complying with the proposed amendments will approach $1.7 billion, not the inexplicably low $5.4 million estimated by the EPA. They stated similarly annual operating compliance costs are estimated at $358 million, far above the $439,000 estimated by the EPA.

Commenters asserted that implementation of the EPA's proposed 15 HAP limits and fenceline monitoring program would be exorbitantly expensive with no associated emission reductions anticipated for the entire source category, and therefore no potential to reduce public health risks. They stated the EPA has estimated that implementation of the 15 proposed HAP limits would solely be the cost of compliance testing at $1.7 million once every 5 years ($320,000 per year) for all sources, whereas more accurate estimates are upwards of $3.2 billion total capital investment, $749 million in annualized costs for point sources.

Commenters further discussed the EPA's gross underestimation of costs reflects several deficiencies, specifically the Agency:

- Relied on insufficient data to calculate the proposed limits.
- Ignored characteristics of available data that show the data is not representative of potential emissions.
- Relied on inaccurate production data.
- Failed to account for known operational, process, seasonal, and measurement variability.
- Mishandled non-detect values in its calculation of proposed limits.
- Overlooked necessary compliance assurance measures.

Response 1:

The EPA has identified 5 UFIP sources as a previously unregulated source of HAP emissions. With regard to the 30 proposed new HAP limits for new and existing point sources, these limits are for previously unregulated HAP. Pursuant to the LEAN decision, CAA section 112(d)(2)/(3) and the Court's Order for EPA to complete this final rule (that fulfills the CAA section 112(d)(6) mandate) by March 11, 2024, EPA must establish standards for these unregulated sources and unregulated HAP based on available data in this final rule. The EPA is finalizing 24 new HAP limits for new and existing point sources as well as 6 work practice and surrogate standards for new and existing point sources.

We collected emissions test data through the CAA section 114 requests, and through public comments. Facilities were asked to conduct and submit stack tests reflecting runs that are representative of normal operations, so the data is expected to be representative of potential emissions. We used all valid available data to calculate representative MACT floor limits using the well-established UPL methodology which accounts for variability in the data. Since all valid available data submitted from section 114 requests and public comments were utilized to calculate emissions limits, the EPA believes the limits are based on sufficient data. So, we are

finalizing 24 numerical emissions limits similar to those proposed with some adjustments based on incorporation of new data received since publication of the proposed rule. Data from the test reports we received demonstrate that facilities should have current emissions that are below the HAP limits, with the exception of the BTF limits for PAH, D/F, and Hg from sinter plants.

The EPA handled non-detect values according to the methods described in the memo titled *Data and procedure for handling below detection level data in analyzing various pollutant emissions databases for MACT and RTR emissions limits*.

Comment 2:

[1595] Commenters stated the EPA must revise cost estimates. They noted the proposed reduction requirements and WP changes will come at significant cost to the industry. Commenters stated although the EPA estimates the cost at $39 million, estimates from USW employers covered by the 2023 Proposal exceed $1 billion. They stated the difference in cost for compliance is a wide gulf that could mean closure for facilities and loss of USW-represented jobs. Commenters indicated the EPA must ensure that the costs for compliance with proposed amendments are feasible for the industry.

Response 2:

The EPA has identified 5 UFIP sources as a previously unregulated source of HAP emissions. Pursuant to the LEAN decision, CAA section 112(d)(2)/(3) and the Court's Order for the EPA to complete this final rule (that fulfills the CAA section 112(d)(6) mandate) by March 11, 2024, the EPA must establish standards for these unregulated sources based on available data in this final rule. After reviewing public comments, the EPA increased the opacity limits for slag handling, processing, and storage to make these limits easier to meet. The EPA has also removed the proposed limits for BF casthouse fugitives and BOPF shop fugitives. The EPA does not expect additional APCDs will be needed to meet the finalized opacity limits and work practice standards.

Comment 3:

[1592] Commenters expressed that the enormous public health benefits of reducing HAP emissions supports adoption of BTF MACT limits and greater reductions in HAP emissions. They also stated the EPA has calculated the benefits of the 2023 Proposal to be $2 billion at a relatively low cost of $36 million under the 2020 Final Action. Commenters noted that while the EPA has recognized that more emissions reductions are achievable, the 2023 Proposal does not require that all achievable measures be implemented. They explained that the 2023 Proposal needs to be more stringent to reduce HAPs to the maximum extent achievable, as mandated by the CAA, which will increase the health and environmental benefits and protections that will be realized.

Commenters disclosed that the two wealthy corporations directly affected by the 2023 Proposal have overstated the cost burden. Commenters stated the steel industry has combined revenue of over $44 billion and can afford to do better, and the CAA requires they do so.
Commenters stated the steel industry is also ignoring the human health benefits of this 2023 Proposal. They indicated that lowering exposures to PM and HAPs results in a healthier economy by supporting a healthier workforce, reducing the burden on the healthcare system, and

lowering the cost of health care associated with pollution-related disease. Commenters said in fact, the EPA's own analysis indicates that the proposed air pollution control is highly cost-effective and yields a benefit that vastly outweighs the costs.

Response 3:

We agree with the commenter that the estimated public health benefits of reducing HAP are substantial. In this rule, certain HAP are also precursors to fine particles. A variety of adverse effects are caused by exposed to fine PM, including premature death, new onset asthma, stroke, and lost days of school and work, among others. The economic value of these cases is significant and, in this rule, were estimated to be billions of dollars.

Comment 4:

[1575] Commenters indicated that cost was an issue. They stated that DCOT image processing is only available from a single entity, thereby raising costs. They said the EPA argued that fixed location camera systems are inappropriate because of the high cost inherent with placing the large number of individual camera units needed for intermittent opacity readings. Commenters stated that these arguments are invalid.

Commenters asserted that although at this time only one vendor (Virtual Technology LLC) offers compliant systems, DCOT is not more expensive than Method 9. They stated a cost analysis performed for the DoD found that DCOT methods are more cost effective than Method 9. They indicated the lower cost for DCOT was driven by causes that still apply, such as Method 9's requirement for recertification every 6 months. Commenters noted that this analysis was made in 2005, when cameras were much more expensive than today and that requiring DCOT will likely grow the market and spur other vendors to offer competing products.
Commenters stated requiring DCOT at this time will involve an investment on the part of II&S manufacturers; however, the compliance costs (without DCOT) for the 2023 Proposal are negligible compared to the industry sales, 0.01%. They said even if the one-time costs of DCOT systems installation increases this ten-fold, the cost will still be a fraction of a percent of industry sales, hardly a barrier for implementation. Commenters stated the EPA should require facilities to implement DCOT for opacity measurement because it's as effective as Method 9, but unlike Method 9 provides timely photographic evidence of emissions that can be re-tested and re-evaluated if necessary and DCOT can easily be updated to provide better accuracy.

Response 4:

The EPA disagrees with the commenter that EPA Method 9 should not be allowed for compliance and that ASTM D7520-16 should be required. EPA Method 9 is the promulgated standard method for opacity measurement against which ASTM D7520-16 is assessed, as such it is inappropriate to disallow the use of EPA Method 9. All of the limitations discussed in *Summary of Public Comments and Responses for Risk and Technology Review for Integrated Iron and Steel Manufacturing Facilities* (EPA-HQ-OAR-2002-0083-1100) are still applicable. The EPA is not making any changes to the currently allowed use of ASTM Method D752-16, and is adding the use of ASTM D7520-16 as an option for compliance with the planned openings opacity standard.

7.2.1 Cost impacts of standards for point sources

Comment 1:

[1631] Commenters stated the 30 proposed new HAP limits for new and existing point sources should not be finalized because:

- they either are not necessary to satisfy the LEAN decision or are not supported by the record or both, and
- the EPA has not provided a sufficient public comment period for the proposed standards.

Commenters reiterated the EPA has explained that the agency expects no control costs as a result of the emission limits, except for compliance testing, recordkeeping, and reporting costs. Commenters stated the EPA does not explain why the Agency believes that there will be no new costs for control, given that each proposed MACT limit is based on very few stack tests such that the EPA cannot account for known raw material, operational, process, seasonal, and measurement variability and, therefore, cannot purport to be representative of best performers. They stated the EPA appropriately solicits comment on the Agency's conclusion that all facilities should be able to comply with these MACT floor limits with current controls and on whether there would be new control costs for facilities to comply with the proposed limits.

Response 1:

With regard to the 30 proposed new HAP limits for new and existing point sources, these limits are for previously unregulated HAP. Pursuant to the LEAN decision, CAA section 112(d)(2)/(3) and the Court's Order for EPA to complete this final rule (that fulfills the CAA section 112(d)(6) mandate) by March 11, 2024, EPA must establish standards for these HAP based on available data in this final rule. The EPA is finalizing 24 new HAP limits for new and existing point sources as well as 6 work practice and surrogate standards for new and existing point sources.

We collected emissions test data through the CAA section 114 requests, and through public comments. Facilities were asked to conduct and submit stack tests reflecting runs that are representative of normal operations, so the data is expected to be representative of potential emissions. We used all valid available data to calculate representative MACT floor limits using the well-established UPL methodology which accounts for variability in the data. Since all valid available data submitted from section 114 requests and public comments were utilized to calculate emissions limits, the EPA believes the limits are based on sufficient data. So, we are finalizing 24 numerical emissions limits similar to those proposed with some adjustments based on incorporation of new data received since publication of the proposed rule. Data from the test reports we received demonstrate that facilities should have current emissions that are below the HAP limits, with the exception of the BTF limits for PAH, D/F, and Hg from sinter plants.

As described in the preamble, after reviewing public comments and available control technologies, we are finalizing emissions limits for D/F, PAHs, and mercury that reflect the installation and operation of ACI controls. The addition of ACI is estimated to result in total combined capital costs of $950K, annualized costs of $2.3M, will achieve 8 grams per year reductions of D/F TEQ emissions, 5.4 tpy reduction in PAHs, and 47 pounds of mercury. Details for these cost calculations can be found in the memo titled *Maximum Achievable Control*

Technology Standard Calculations, Cost Impacts, and Beyond-the-Floor Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF.

Comment 2:

[1631] Commenters stated the proposal violates CAA section 112(d) because the EPA fails to consider cost as required by section 112(d)(2). They indicated that as section 114 and Title V of the CAA each require certification of compliance status (either continuous or intermittent) to avoid state or federal enforcement action and potential citizen suit, where facility test data yield results exceeding or approaching the standard, II&S facilities will need to determine if there is an appropriate technological control and then, if needed, install control equipment within six (6) months after the 2023 Proposal is finalized to ensure the facilities are able to certify such compliance, which would be impossible given outage planning, testing, contracting, engineering evaluation, plant reconfiguration, and numerous other time-consuming aspects of adding control equipment.

[1631] Commenters stated that the EPA has not included a control cost analysis in the record; however, industry commenters have prepared a control cost analysis for the 2023 Proposal. They stated the analysis includes an industry-wide estimate of total capital and operating costs based on the industry's evaluation of potential control technologies, the increased electrical and natural gas usage by the industry as a result of these required controls, as well as other contributing costs. The commenters indicated there are additional costs, such as associated greenhouse gas (GHG) emissions, that have not been included in the industry commenters evaluation.

[1631] Commenters stated that in addition to the potential for exceedance, the limited data underlying the EPA's proposed standards also show orders of magnitude differences in emissions, which further indicates that the use of control equipment would be needed to assure compliance. Commenters expressed that given this, the EPA cannot finalize a standard with the existing data and claim that no source would be required to install emissions controls in order to avoid accounting for the full costs of the 2023 Proposal.

Response 2:

Pursuant to the LEAN decision, CAA section 112(d)(2)/(3) and the Court's Order for EPA to complete this final rule (that fulfills the CAA section 112(d)(6) mandate) by March 11, 2024, EPA must establish standards for previously unregulated HAP based on available data in this final rule. The EPA is finalizing 24 new HAP limits for new and existing point sources as well as 6 work practice and surrogate standards for new and existing point sources.

We collected emissions test data through the CAA section 114 requests, and through public comments. Facilities were asked to conduct and submit stack tests reflecting runs that are representative of normal operations, so the data is expected to be representative of potential emissions. We used all valid available data to calculate representative MACT floor limits using the well-established UPL methodology which accounts for variability in the data. Since all valid available data submitted from section 114 requests and public comments were utilized to calculate emissions limits, the EPA believes the limits are based on sufficient data. So, we are finalizing 24 numerical emissions limits similar to those proposed with some adjustments based on incorporation of new data received since publication of the proposed rule. Data from the test

reports we received demonstrate that facilities should have current emissions that are below the HAP limits, with the exception of the BTF limits for PAH, D/F, and Hg from sinter plants. Therefore, the EPA disagrees that additional control equipment would need to be installed on BF casthouse, BF stove, or BOPF casthouse emission points.

With regard to D/F and PAHs from sinter plants, we conclude that we have sufficient data to develop appropriate MACT limits. We have 13 test runs from 3 different sinter plants for each of these HAP (i.e., D/F and PAHs). Furthermore, as described in the preamble, after reviewing public comments and available control technologies, we are finalizing emissions limits that reflect the installation and operation of ACI controls, which are emissions limits of 1.1E-08 lbs/ton of sinter for D/F (TEQ), 1.8E-03 lbs/ton of sinter for PAHs, and 1.8E-05 lbs/ton for mercury for existing sinter plant windboxes. Regarding new sources, we are promulgating limits of 1.1E-08 lbs/ton of sinter for D/F (TEQ), 1.5E-03 lbs/ton of sinter for PAHs, and 1.2E-05 lbs/ton for mercury for new sinter plant windboxes. The application of this ACI will achieve significant reductions of mercury, D/F and PAH emissions, important reductions given that mercury and D/F are highly toxic, persistent bioaccumulative pollutants, as described above, and PAHs (some of which are known or probable carcinogens). We expect that polishing baghouses will not be needed to meet these limits. We estimate these limits for the three separate HAP will result in total combined capital costs of $950K, annualized costs of $2.3M, will achieve 8 grams per year reductions of D/F TEQ emissions, 5.4 tpy reduction in PAHs, and 47 pounds of mercury.

Comment 3:

[1631] Commenters stated the costs to implement the proposed HAP limits are unreasonable, having the potential to jeopardize the crucial, domestic iron and steel industry. Commenters estimated that the 2023 Proposal would impose exorbitant costs. They stated the proposed limits would force companies to install many new pollution controls which may not be proven to always maintain compliance. They stated the industry commenters' cost estimate for all affected point source process units and proposed limits totals approximately $3.2 billion in capital investment and $749 million in annual costs. They disclosed that these calculations are based upon many uncertainties, limited EPA data, and in some cases unproven technologies. They stated the estimates were prepared to try to determine what the potential impacts of the 2023 Proposal could be, but these estimates also support that the EPA needs to engage with stakeholders and develop a more technologically and economically feasible rule.

[1631] Commenters evaluated the following technologies:

- ACI with a polishing baghouse for control of Hg, PAHs, and D/F. Units controlled by wet scrubbers cannot install a polishing baghouse due to moisture plugging concerns. Therefore, it was assumed that a dry ESP would replace the existing scrubbers to maintain the existing particulate control and allow for product recycle as applicable. A polishing baghouse would be installed downstream of the new ESP. Existing sources without wet scrubbers would only install ACI with a polishing baghouse.
- DSI with a polishing baghouse for control of HCl, and HF. Same as ACI, existing wet scrubbers would be replaced by a dry ESP, followed by a polishing baghouse. Existing sources without wet scrubbers would only install ACI with a polishing baghouse.

- Regenerative thermal oxidizer for control of THC, COS, and CS2. It is assumed that an RTO could provide incremental control of THC. For COS and CS2, it was assumed that a quench with DSI and a polishing baghouse would be installed downstream of the RTO to capture the SO2 formed by the oxidation of COS and CS2.

Commenters also evaluated the cost-effectiveness of controls by pollutant. They stated the range of cost-effectiveness by unit type and pollutant shows compliance with the 2023 Proposal would be unreasonable and not remotely close to being justifiably as cost effective for any business. The commenters stated for comparison, the EPA previously found that controls are not considered cost effective during the 2019 Proposal, where cost effectiveness estimates were determined to be $188 trillion per ton ($94 million per lb) for sinter plant dioxins/furans, respectively. Commenters stated that following the EPA's prior determinations as a guide, the extreme cost effectiveness values demonstrate that controls under any existing scenario are not cost-effective; therefore, it is not economically feasible to install any pollution controls, and the EPA should not finalize the 2023 Proposal speciated HAP limits that would, in fact, require facilities to install controls for all targeted pollutants under any operating scenarios due to the unjustifiably and extremely high costs.

[1631] Commenters disclosed that all assumptions are documented in the Industry Commenters' cost analysis. They stated it should be noted that there are many affected units requiring control technologies to ensure continuous compliance for applicable regulated pollutants. They revealed the resulting permutations and combination of emission units and pollutants results in 161 separate cost-effectiveness evaluations to cover all affected sources. They stated further details and assumptions can be found in the cost analysis, such as, key information and assumptions supporting the engineering cost evaluation include the following:

- Based on the potential for considerable emissions variability and various performance test results exceeding the proposed standards, Industry Commenters assumed a hybrid approach to estimate emission reductions achieved by emission controls. Pollutant emission rates entering control equipment assume that: 90% of annual emissions are represented by site-specific performance tests or appropriate averages below the proposed emission standards for units with site-specific tests, and 10% of annual emissions would exceed the proposed pollutant specific standards by 5%.
- The cost analysis for point sources is not duplicated with costs required to comply with the standards for what the EPA has designated as UFIPs also proposed in this rulemaking. For example, the total industry costs exclude new polishing baghouse costs for the casthouse DSI evaluation because the baghouse cost is already accounted for by the UFIP cost evaluation.
- Capital equipment costs are scaled to each unit based on recent vendor quotes from similar projects and adjusted for inflation using the Chemical Engineering Plant Cost Index. Equipment sizing is site-specific based on emission unit exhaust flowrates and operational parameters. Capital equipment is different for each control technology and evaluated scenario but may include: new particulate control devices; regenerative thermal oxidizers; fans and motors to overcome increased incremental system pressure drops; stacks; and ACI and DSI systems.
- Operating costs include incremental increases in electricity, solid waste disposal, make-up water, compressed air and natural gas consumption. Solid waste disposal costs do not

account for incremental process dust capture, which is likely to occur and increase annualized costs.

- Economic impacts analyses follow the procedures found in the most up to date sections of the EPA Control Cost Manual (CCM).
- Industry Commenters assumed that a control efficiency of 50% for control equipment given the significant uncertainty that additional emission control is technically feasible with the dilute inlet concentrations of regulated HAPs (see feasibility concerns above). The only exception is COS and CS2 from the sinter/recycling plants because these sulfur compounds can be readily oxidized in an RTO at higher temperatures.
- Estimates of production rates, operating hours, and design exhaust flows for new equipment are based off of facility-specific values from the 2022 ICR responses or other facility specific data.
- A retrofit factor of 1.5 has been applied to account for additional construction costs imposed by extreme space constraints at all facilities and the increased difficulty of retrofit installations, equipment handling and erection due to numerous reasons, such as space restrictions impeding transportation access and laydown space, etc. for new equipment, structural weight capacity limits for rooftop installations, electrical infrastructure limitations, the ancillary equipment requirements of evaluated technologies, piping, structural, electrical, demolition, etc.
- Based on the scale of the proposed equipment installations, industry expects that it would require significant downtime beyond that of a typical annual outage to tie in the new equipment and resume normal operations and, thus, lost production (causing lost revenue) to install the proposed controls. Extreme space constraints are likely to require demolition of existing control devices to make room for upgrades. All of this would take additional time. These costs would be substantial and detrimental to the livelihood of industry facilities. These costs are not included in the cost analysis at this time given the limited time period for comment.

Response 3:

As described in the preamble, after reviewing public comments and available control technologies, we are finalizing emissions limits that reflect the installation and operation of ACI controls, which are emissions limits of 1.1E-08 lbs/ton of sinter for D/F (TEQ), 1.8E-03 lbs/ton of sinter for PAHs, and 1.8E-05 lbs/ton for mercury for existing sinter plant windboxes. Regarding new sources, we are promulgating limits of 1.1E-08 lbs/ton of sinter for D/F (TEQ), 1.5E-03 lbs/ton of sinter for PAHs, and 1.2E-05 lbs/ton for mercury for new sinter plant windboxes. The application of this ACI will achieve significant reductions of mercury, D/F and PAH emissions, important reductions given that mercury and D/F are highly toxic, persistent bioaccumulative pollutants, as described above, and PAHs (some of which are known or probable carcinogens). We expect that polishing baghouses will not be needed to meet these limits. We estimate these limits for the three separate HAP will result in total combined capital costs of $950K, annualized costs of $2.3M, will achieve 8 grams per year reductions of D/F TEQ emissions, 5.4 tpy reduction in PAHs, and 47 pounds of mercury. Data from the test reports we received demonstrate that facilities should have current emissions that are below the HAP limits, with the exception of the BTF limits for PAH, D/F, and Hg from sinter plants. Therefore, the EPA disagrees that additional control equipment would need to be installed on BF casthouse, BF stove, or BOPF casthouse emission points.

7.2.2 Cost impacts of fenceline monitoring standards

Comment 1:

[1631] Commenters stated the proposed fenceline monitoring regulations should not be adopted. Commenters stated the EPA has underestimated the costs for the fenceline monitoring program in a base case and has not taken into account additional costs that will be incurred to comply with the 2023 Proposal. Commenters indicated the EPA has estimated the capital costs for four monitors at $100,000 and recurring operating costs at $164,000 per year per facility. They voiced the EPA has underestimated these costs and has failed to take into account costs for additional monitors needed to determine onsite and offsite contributors beyond the UFIP sources and also for meteorological stations and associated data acquisition, data handling, and analytical programs. They expressed that many of these costs cannot be determined because the final sampling method has not been promulgated, which will affect sample, labor, analytical, and data management costs. Commenters asserted the EPA's estimated costs also do not consider the cost of the required root cause analysis and corrective actions following action level exceedances, which could be very expensive and resource-intensive—and yet still result in an inconclusive finding.

[1631] Commenters stated that the EPA also failed to consider escalating prices due to an increased demand following promulgation of this fenceline monitoring requirement, as was seen following promulgation of the petroleum refinery MACT fenceline monitoring requirements. They reiterated the EPA acknowledges in the RIA that additional controls could be needed to maintain fugitives below a fenceline concentration of 0.1 µg/m3 —beyond the 5% opacity and WP standards required for BOPF shops; yet, the FR states: that the proposed combination of WP and opacity limits will likely ensure levels remain below this action level most, if not all, of the time, so the only costs for this requirement will be the costs for developing the plans, setting up monitoring equipment, collecting and analyzing the samples, and reporting the results. Commenters stated the EPA therefore admits that the Agency has failed to take into account the full costs of compliance with the fenceline monitoring program.

[1631] Commenters maintained while the costs for the monitoring program cannot be precisely determined because the sampling method has not been promulgated, contractors who provide fenceline monitoring services estimate that the cost for each monitor would be significantly higher than the EPA's estimates. They said when the EPA established the ICR fenceline monitoring program, the Agency required monitors that measure total chromium based on total suspended particulate (TSP), and industry has records to support the expenses incurred for those monitors. Commenters asserted that based on vendor quotes, TSP-based monitors for total chromium sampling methods tend to be less expensive than PM10-based total chromium sampling methods. They indicated that because EPA Region V has conducted recent ambient monitoring studies near the Burns Harbor and Gary Works facilities using PM10 monitors, and because these monitors measure the inhalable fraction and would provide information regarding the more important fraction of particulates, industry prefers PM10-based total chromium sampling methods over total chromium TSP-based sampling methods.

[1631] Commenters said while the EPA estimates the total capital costs for each facility to be $100,000, industry estimates, based on prior experience and the expectation that a PM10-based total chromium sampling method will be promulgated by the EPA, are in the range of $215,000 per facility, including an onsite meteorological station. Commenters expressed concern that the costs are uncertain and could, of course, be even more expensive because the EPA has not promulgated the sampling method yet. Commenters indicated that because nearby, appropriate meteorological stations may not be available, or because the facility's terrain renders a nearby meteorological station inappropriate to use, II&S facilities may need to install, operate, and maintain their own onsite meteorological station with all data continuously recorded. They stated the EPA did not consider the costs that would be incurred for such a meteorological station and associated data handling and analysis software and equipment, which are not insignificant and estimates are included in the industry analysis.

[1631] Commenters said the EPA estimates annualized, recurring costs of $164,000 per year. Commenters stated that based on industry experiences from the ICR fenceline monitoring program and updated vendor quotes, and taking into account inflation impacts between the 2022 program and implementation of the new program in 2026, the EPA's estimate is too low. Commenters estimated annualized costs of $225,000 per year per facility, which includes expenses associated with operating and maintaining a meteorological station and associated data handling and analysis. Commenters stated additionally, the EPA has not considered replacement costs for sampling and meteorological equipment, which would drive the overall program cost even higher, yet these costs cannot be determined without a promulgated sampling method.

[1631] Commenters stated for the entire source category comprised of eight (8) facilities, the EPA estimated $800,000 in capital costs, along with $1.3 million per year in annual recurring costs. Commenters indicated that more accurate estimates are much higher at $2.2 million in capital costs and $1.8 million in annual recurring costs. They stated more accurate costs are unreasonable and unjustified, especially in light of the EPA's admission that this program is duplicative of other compliance assurance methods and not likely to result in a reduction in emissions, resulting in no cost-effectiveness.

[1631] Commenters stated because the capital and annual costs for the proposed fenceline monitoring program are unreasonably expensive with no associated emission reductions anticipated and with no reasonable correlation to the EPA's stated goal of ensuring compliance with UFIP opacity and WP standards, the Agency should withdraw the proposed fenceline monitoring rules and instead utilize more traditional methods of determining compliance with opacity limits and WP standards.

Response 1:

As explained in the preamble of the final rule, EPA estimates the cost breakdown for the fenceline monitoring requirement will be $25,000 capital cost and $41,100 annual operating costs per monitor, $100,000 capital costs and $164,000 annual operating costs per facility, and $800,000 capital costs and $1.3M annual operating costs for the source category (assumes 8 operating facilities). With respect to the commenter's assertion that PM10 samplers are more expensive, that is immaterial. As the action level was set using TSP data, it would be inappropriate to compare data from a PM10 sampler, which selectively collects only PM less

than 10 microns, to the action level in determine if the action level has been exceeded. Based upon the sampling conducted during the CAA section 114 request, either a meteorological station is sufficiently close to the facility or the facility already has a meteorological station onsite. Note that onsite meteorological data is only required when the optional SSMP plan is used to correct monitoring data for near field contributions.

7.2.3 Cost impacts of unplanned bleeder valve openings standards

Comment 1:

[1631] Commenters stated the proposed operational limit of 5 unplanned pressure relief devices (PRD) openings per year and the WP standards are flawed. The 2023 Proposal underestimates the cost-effectiveness rate for compliance with the limitation on the number of unplanned openings per year and the proposed WP standards.

Commenters stated based on the EPA's estimated reduction of 1 tpy of HAPs at an annualized cost of $239,790, the cost-effectiveness rate is $478,847 per ton removed. However, they stated the EPA has not substantiated the estimated emissions or level of emission reductions. They maintained the EPA's cost-effectiveness analysis suffers from three major areas of potential uncertainty that, when compounded, would render the EPA's estimates unreliable for making a final determination.

- First, there is no way to quantify with high confidence rates of unmeasurable or intermittent pollutants from unplanned BF PRD openings.
- Second, there is no way to quantify with high confidence the expected PM or HAP reduction rates expected based on the proposed WP standards.
- Third, the EPA fails to address site-specific costs for each unique BF necessary to accurately assess cost-effectiveness.

Commenters stated in short, compounding errors of this sort offer very low or no confidence in the EPA's emissions estimate before the MACT or after implementation of the MACT, or costs to comply with the 2023 Proposal. The only reasonable way to improve confidence in these analyses would be to complete furnace-specific cost estimates and more rigorous studies on the effects of actions that could be taken to reduce the number of unplanned openings, and to improve data collection studies on unmeasurable pollutants. Until the EPA undertakes a more robust analysis of the expected emission reductions and costs, the Agency should not move forward with the proposed WP standards or limit on unplanned PRD openings.

[1631] Commenters claimed that based on industry's UFIP Memorandum included as Appendix A, a more realistic estimate of total capital costs is $50 million instead of the EPA's $1.5 million and overall annual costs of $5 million instead of the EPA's $239,790. They indicated that if the deficiencies in EPA's emission estimates are corrected, a more realistic expectation of HAPs to be removed drops from 1 tpy to 0.2 tpy—400 pounds, and, based on the EPA's cost estimates, the cost-effectiveness rate is an unreasonable $1.3 million per ton of HAPs removed. They stated if industry's more accurate cost information is used, even based on the EPA's estimated 1 tpy of HAP removed estimate, the cost-effectiveness rate multiplies to $10 million per ton of HAP removed, which is unreasonable by any measure. They asserted that using industry's emission estimates and cost estimates, the cost-effectiveness rate soars to $40 million per ton of HAPs removed. They stated under section 112(d)(2), the EPA must take into consideration the cost of

achieving such emission reduction, if the 2023 Proposal is too costly, making the MACT standard infeasible, the EPA cannot move forward. Commenters concluded that there is no question that at a cost-effectiveness rate in the range of a quarter of a million to a quarter of a billion to reduce a half ton of HAPs is simply too costly. They stated given this unprecedent and unjustified expense, the EPA should withdraw the proposed WP standards and operational limit on the number of unplanned PRD openings per year.

Response 1:

The EPA believes that the emission factors used to develop emissions estimates, and subsequently the cost-effectiveness for unplanned bleeder valve openings, were appropriate. The HAP/PM emission ratios used to calculate emissions and reductions for unplanned bleeder valve openings were developed directly from BF test data. The PM emission factor per opening was calculated from AP-42 values in conjunction with an assumed average duration of 5 seconds.

The EPA has identified unplanned bleeder valve openings as a previously unregulated source of HAP emissions. Therefore, pursuant to the LEAN decision and CAA section 112(d)(2)/(d)(3), the EPA is establishing emissions standards for this previously unregulated source. In certain instances, as provided in CAA section 112(h), if it is the judgment of the Administrator that it is not feasible to prescribe or enforce an emission standard under CAA 112(d)(2) and (3), the EPA may set work practice standards under CAA 112(h) in lieu of numerical emission standards. Unplanned openings, as a result of their unpredictable timing as well as their short duration, are not able to be tested using conventional emissions test methods. There are also potential safety issues that, even if a test method were developed, make testing these locations during an unplanned opening impossible. For BF unplanned bleeder valve openings, the Administrator has determined that since there is no direct measurement of emissions, we are finalizing a work practice standard. In this action, the EPA is promulgating a limit of 4 unplanned openings a year for large furnaces and 15 unplanned openings a year for small furnaces. The change from the Proposed Rule to develop separate limits for large and small furnaces is expected to make it easier for small furnaces to achieve the limit on unplanned openings.

7.2.4 Cost impacts of planned bleeder valve openings standards

Comment 1:

[1631] Commenters restated from the 2023 Proposal for BF planned bleeder valve openings, the EPA estimates the cost to be $56,600 per year for the entire category and $6,800 per year per facility, with an estimated 0.41 tpy reduction in HAP metal emissions. Commenters stated the EPA estimates result in the cost effectiveness of the 2023 Proposal as being $134,000 per ton of HAP metals.

[1631] Commenters stated the 2023 Proposal opacity standards and WP standards to address fugitive emissions from five UFIP source types under Section 112(d)(2), (d)(3), and (h) are flawed and should not be finalized as proposed. They stated the proposed requirements for planned pressure relief devices (PRD) must be withdrawn or revised. Commenters maintained the cost-benefit calculations for planned openings are inaccurate by nature and are insufficient to substantiate a final determination on cost-effectiveness.

[1631] Commenters asserted that based on the EPA's estimated industrywide overall annual costs to comply with the 8% opacity standard for planned PRD openings of $54,603 to reduce 0.4 tpy of metal HAPs, the cost-effectiveness rate is $134,477 per ton of HAPs removed. They disclosed if the corrected emission factors are used, the cost more than doubles to $360,554. They also stated if the emission factors that industry finds most credible are used, then the cost doubles again—to $671,941 per ton of HAP removed. They cited under the CAA section 112(d)(2), the EPA must "tak[e] into consideration the cost of achieving such emission reduction." They expressed overall annual costs in this range to reduce a minor quantity of HAPs are unreasonable, and, based on industry's analysis for other UFIP source categories, emissions are likely overestimated, and costs are underestimated. They stated the EPA's analysis for planned PRD openings, like the EPA's analyses for the other UFIP categories, suffers from three major areas of potential uncertainty that, when compounded, would render the EPA's estimates unreliable for making a final determination.

- First, there is no way to quantify with high confidence rates of "unmeasurable" or "intermittent" pollutants from planned blast furnace PRD openings.
- Second, there is no way to quantify with high confidence the HAP reduction rates expected based on a proposed 8% opacity standard.
- Third, EPA fails to prepare site specific-cost estimates for each unique blast furnace, including its PRD openings.

[1631] Commenters stated in short, compounding errors of this sort offer very low or no confidence in the EPA's emissions estimate before the MACT, after implementation of the MACT, or in the costs to comply with the 2023 Proposal. They maintained the only reasonable way to improve confidence in these analyses would be to complete furnace-specific cost estimates and more rigorous studies on the effects of actions that could be taken to reduce the number of planned openings and to improve data collection studies on unmeasurable pollutants. They emphasized that until the EPA undertakes a more robust analysis of the expected emission reductions and costs, the Agency should not move forward with the proposed opacity limit.

Response 1:

The EPA believes that the emission factors used to develop emissions estimates, and subsequently the cost-effectiveness for planned bleeder valve openings, were appropriate. An explanation for the emission factor used for planned bleeder valve openings can be found in the memo titled *Development of Emissions Estimates for Fugitive or Intermittent HAP Emission Sources for an Example II&S Facility for Input to the RTR Risk Assessment*. The HAP/PM emission ratios used to calculate emissions and reductions for planned bleeder valve openings were developed directly from BF test data.

The EPA has identified planned bleeder valve openings as a previously unregulated source of HAP emissions. Therefore, pursuant to the LEAN decision and CAA section 112(d)(2)/(d)(3), the EPA is establishing emissions standards for this previously unregulated source. In this action, the EPA is promulgating an opacity limit of 8 percent, which we conclude represents the MACT floor level of performance, which is the minimum stringency allowed by the CAA section 112(d).

7.2.5 Cost impacts of slag processing, handling, and storage standards

Comment 1:

[1631] Commenters stated for the 2023 Proposal, the BTF standards being proposed for BF and BOPF slag processing, handling, and storage sources, the EPA estimates a cost of $308,000 per year for the entire category and $38,500 per facility, with a resulting estimated 7.4 tpy reduction in HAP metal emissions. They indicated the estimated cost-effectiveness in this case is $41,900 per ton of HAP metals.

[1631] Commenters stated for the 2023 Proposal underestimates costs for control equipment needed to meet a 5% to 9% opacity standard. They compared the EPA and industry estimates asserting the EPA estimates that the industrywide cost to comply with a 5% opacity standard is $562,774 in total capital costs and $307,818 in overall annual costs. They stated the EPA assumes that a dry fog system would be installed for facilities that currently exceed the proposed opacity limit; thus, the same costs would therefore be incurred regardless of whether the EPA set the limit at 5% or 9%. They stated the EPA has underestimated these costs significantly, even before factoring in maintenance costs, the investment to install a single spray system is in excess of $250,000 for a single slag pit, which includes costs for new headers, piping, and spray nozzles.

Response 1:

The EPA is not finalizing the BTF opacity limit for slag processing, handling, and storage and is instead revising the opacity limit from 5 percent to 10 percent (6-minute average) in the Final Rule. The 300+ readings of opacity data collected from the 2022 section 114 collection requests indicates that none of the II&S facilities have VE above an average of 10 percent opacity. The EPA has identified slag handling, storage, and processing operations as a previously unregulated source of HAP emissions. Therefore, pursuant to the LEAN decision and CAA section 112(d)(2)/(d)(3), the EPA is establishing emissions standards for this previously unregulated source. In this action, the EPA is promulgating an opacity limit of 10 percent, which we conclude represents the MACT floor level of performance, which is the minimum stringency allowed by the CAA section 112(d).

The EPA used the same cost estimates for dry fog systems that were used in the 2019 work practice cost calculations. The use of fog systems for reducing emissions was verified by vendor experience in similar industries.

Comment 2:

[1597] Commenters stated they support the comments filed by the American Iron and Steel Institute (AISI) and the Steel Manufacturers Association (SMA) in this 2023 Proposal.

Commenters stated the EPA's proposed opacity limits for emissions for slag handling, storage and processing are not justified. They cited the preamble to the 2023 Proposal, stating emissions from slag processing, handling and storage occur during four activities:

- dumping of hot slag in pits;
- storing slag in open pits;

- removing slag from pits with loaders, and;
- handling (e.g., movement into and out of trucks and slag piles), storage, and processing.

They stated the EPA contends that establishing an opacity limit of 5% (based upon 6-minute averages) for visible emissions from BF and basic oxygen furnace slag handling, storage and processing from existing sources will result in an estimated 7.4 tpy reduction in HAP metal emissions and that the EPA estimates the cost to comply with the proposed 5% opacity limit at $308,000 per year for the entire category and $38,500 per year per facility. Commenters stated that furthermore, the Agency states, the estimated cost effectiveness is $41,900 per ton of HAP metals reduced. Commenters restated for new sources, the EPA is proposing an opacity limit of 2.5% (based upon 6-minute averages) for visible emissions from BF and basic oxygen furnace slag handling, storage and processing from new sources.

Response 2:

The EPA is not finalizing the BTF opacity limit for slag processing, handling, and storage and is instead revising the opacity limit from 5 percent to 10 percent (6-minute average) in the Final Rule. For new sources, the EPA is finalizing an opacity limit of 3 percent (6-minute average). The EPA anticipates the cost to comply with this limit and the cost effectiveness of HAP reduction to remain the same as the Proposed Rule.

Comment 3:

[1597] Commenters stated the EPA grossly underestimates the difficulty and financial burden associated with an opacity limit of 5% (based upon 6-minute averages) for visible emissions from BF and basic oxygen furnace slag handling, storage and processing from existing sources.

They said the EPA determined based on evaluation of available information that emissions can be minimized from slag pits cost effectively with the application of water spray or fogging to meet the proposed 5% opacity limit; however, this is an incorrect conclusion.
They stated the EPA also concluded that other WPs such as installing wind screens, dust suppression misters, a high moisture content of the slag during handling, storage, and processing and using material handling practices can help minimize emissions.
Commenters provided the following:

- First, measuring visible emissions using EPA Method 9 for an outdoor fugitive source is challenging and subjective. There are many variables that influence opacity observations, including light conditions, distance and direction to the source, sun angle, background color, wind, commingling of multiple sources and so on.
- Second, when the fugitive source is intermittent, like slag processing, it is even more challenging to obtain representative readings. Slag handling, storage and processing operations are not continuous; they vary throughout the day.
- Finally, an opacity limit on visible emission of 5% (based upon a 6-minute average) for existing and 2.5% for new sources is basically zero and nearly unachievable due to Method 9 observers reading in 5% increments. Any opacity observed, even if actually lower than 5%, is recorded as 5%.

They asserted that II&S facilities would need to install enclosures, with large ventilation systems and emission controls, for slag pits and other ancillary operations to consistently comply with a

5% (based upon a 6-minue average) opacity limit on slag handling, storage and processing. They stated there are no other emission controls, that on their own or in combination, would be effective in meeting this extremely low opacity limit.

They estimated the cost to construct the required enclosure with industrial ventilation and emission controls is approximate $25M for each BF slag pit and basic oxygen slag pit; therefore, the cost to an II&S facility would be $50M in capital cost at a minimum. They stated that in addition to the capital cost, there would be a significant operating cost associated with the industrial ventilation system. They divulged that recently, a stainless-steel electric arc furnace mill constructed an enclosure for their significantly smaller slag pits at a cost exceeding $22M. Commenters stated this enclosure was constructed because the stainless-steel slag produced at that facility disintegrates to a fine powder as it cools, where BF and basic oxygen furnace slag does not.

They disagreed with the 2023 Proposal where the EPA states the equipment used to reduce or eliminate slag emissions includes wind screen, foggers, and granulation and provide the following in the order presented:

- Wind screens have zero impact on the visible emission opacity at the source. They will not provide any assistance in meeting a 5% opacity limit on visible emissions at the source. They are expensive and require space to install that is not available at every facility. Wind screens in select applications may provide limited benefit in minimizing the travel distance of fugitive emissions. However, it is important to note that slag pits are often located within the heart of the II&S facility, a significant distance from the property lines, so wind screens would provide little benefit to the offsite community.
- Foggers, or dry fog water spray systems, are particularly successful at controlling dust where the use of ultrasonic nozzles (and compressed air) produce a plume of very small low-mass droplets, according to the EPA. Unfortunately, this is not true in an outdoor environment. These are the claims of the supplier of these fog water spray systems. They are not effective at II&S slag pits for two reasons: First, the very small low-mass water droplets that make fogging systems effective in select-controlled environments are dramatically impacted by the slightest breeze, let alone strong winds, preventing the systems from creating the fog blanket that is required to control PM. The fine water droplets are at the mercy of the wind and the second issue is that the area of a slag pit is too large to effectively push the fine droplets of water to create a fog blanket, and again, they are at the mercy of weather conditions. In addition, these fogging systems must be installed in close proximity to hot slag, which presents another challenge to this technology, including safety of the employees. Currently, there are no commercially available systems that are constructed of materials that can survive the thermal energy released by slag.
- Although granulation of BF slag has the effect of minimizing PM from the handling, storage, and processing of blast furnace slag, conversion to a granulation process requires an adequate market for the product, which is an entirely different product with an entirely different market than air cooled slag. Additionally, granulation systems are expensive to own and operate. They have an estimated capital cost of over $30M and significantly higher ongoing operating and maintenance costs. Also, granulation of basic oxygen

furnace slag does not currently produce a marketable slag product. Granulation should never be considered a type of WP to minimize emissions.

- Use of water, via water sprays or misting devices, is still the most effective method to control PM emission. However, it is critical to remember that there are limits to the volume of water that can be use in slag pits. Standing water in slag pits create an extreme safety risk. Small pools of standing water trapped by molten slag or metal will create a reaction very similar to an explosion. Extreme care must be taken to ensure that slag pits are not over or incorrectly watered.

Commenters declared that the II&S industry is currently using the best available cost-effective technologies to control emission of PM from slag handling, storage, and processing. They stated for the reasons stated above, fogging systems and wind fences are not effective PM emission controls for slag pits. They expressed that the only control technologies that would effectively meet a 5% opacity limit on visible emissions from slag handling, storage, and processing are granulation and complete enclosure of slag pits and other ancillary operations. They stated both technologies have extremely high capital and operating expenses, and granulation cannot be considered only for the sake of reducing emissions.

Response 3:

The EPA is not finalizing the BTF opacity limit for slag processing, handling, and storage and is instead revising the opacity limit from 5 percent to 10 percent (6-minute average) in the Final Rule. The 300+ readings of opacity data collected from the 2022 section 114 collection requests indicates that none of the II&S facilities have VE above an average of 10 percent opacity. The EPA has identified slag handling, storage, and processing operations as a previously unregulated source of HAP emissions. Therefore, pursuant to the LEAN decision and CAA section 112(d)(2)/(d)(3), the EPA is establishing emissions standards for this previously unregulated source. In this action, the EPA is promulgating an opacity limit of 10 percent, which we conclude represents the MACT floor level of performance, which is the minimum stringency allowed by the CAA section 112(d).

Comment 4:

[1597] Commenters stated the EPA severely underestimates the cost to industry to comply with an opacity limit of 5% (based upon 6-minute averages) for visible emissions from BF and basic oxygen furnace slag handling, storage and processing from existing sources. They asserted that to comply with a near zero opacity limit (5% existing sources, 2.5% new sources) on UFIP emissions from the handling, storage, and processing of BF and basic oxygen furnace slag would be extremely difficult and place a tremendous financial burden on the II&S industry. They maintained that to comply with the proposed 5% opacity limit, II&S facilities would need to totally enclose BF and basic oxygen furnace slag pits and several ancillary operations, which would require the construction of large buildings with an industrial ventilation system and emission controls (bag houses). They disclosed that the estimated cost to construct a single enclosure with industrial ventilation and emission controls is $25M based upon the actual cost to construct an enclosure around a stainless-steel electric arc furnace mill’s significantly smaller slag pits, which exceeded $22M. They stated the approximate capital cost required to comply with the proposed 5% opacity limit on visible emissions is $25M per pit, $50M per facility, and $400M for the II&S industry. They compared their cost estimates to the EPA’s estimated capital

cost of $562,774 for the entire II&S industry. They stated the EPA's estimated capital cost is based upon purchasing and installing either a fogging system or water sprays at most II&S facilities, yet these technologies will not achieve compliance with a 5% opacity limit for slag operations. They stated for reference, the purchase of a single water misting machine costs $80,000 - $120,000 depending on features, with an additional $25,000 - $50,000 for installation with a typical slag pit requiring at least four (4) water misting machines.

Commenters stated the projected annual operating cost for the required new slag pit enclosures is driven by the high demand for electricity to operate the industrial ventilation systems and emission control devices. They continued that the annual cost for electricity alone to operate these systems is anticipated to exceed $1M per enclosure, which correlates to over $16M for the II&S industry. They claimed that in addition to the cost of electricity, there will be additional costs for operation and maintenance labor, and replacement parts.

Commenters summarized that the Agency's proposed imposition of opacity limits on slag operations is based on a series of incorrect assumptions regarding estimated emissions and costs, with the resulting 2023 Proposal that is not based in reality or legally justified, and will impose undue financial burden on II&S facilities to address relatively low potential risks from UFIP emissions associated with slag operations.

Commenters stated that given the above, the EPA's asserted cost-effectiveness ratio to meet the 5 percent opacity standard of $41,900 per ton of HAP reductions is dramatically understated. They expressed that the EPA's cost-effectiveness analysis is compromised by the lack of quantifiable emissions (and potential emission reductions) from unmeasurable and intermittent slag operation emissions, as well as the lack of a meaningful and realistic technology assessment and cost analysis. They stated as detailed in AISI's comments, a more realistic cost-effectiveness analysis shows that the 2023 Proposal would result in costs of several million dollars per ton of HAP reduced, an amount that is well-beyond reasonable.

Commenters asserted that before proceeding with the 2023 Proposal of slag operations, the EPA must collect and utilize accurate emissions data, as well as information on compliance costs, rather than relying on the use of surrogates to characterize unique, intermittent, and unmeasurable emission sources. Commenters stated the EPA should acknowledge the fact that these intermittent emissions – which vary considerably in nature and extent among the many different configurations of steel mills – currently are addressed on a case-by-case basis through existing industry practices.

Commenters stated that establishment of a BTF opacity limit would place an undue financial burden on the II&S industry to achieve no significant reduction in HAP. They noted that it is imperative that the EPA collect actual data and generate a robust analysis of estimated emission reductions and costs before moving forward with any final opacity limits for slag operations.

Response 4:

The EPA is not finalizing the BTF opacity limit for slag processing, handling, and storage and is instead revising the opacity limit from 5 percent to 10 percent (6-minute average) in the Final Rule. The 300+ readings of opacity data collected from the 2022 section 114 collection requests

indicates that none of the II&S facilities have VE above an average of 10 percent opacity. The EPA has identified slag handling, storage, and processing operations as a previously unregulated source of HAP emissions. Therefore, pursuant to the LEAN decision and CAA section 112(d)(2)/(d)(3), the EPA is establishing emissions standards for this previously unregulated source. In this action, the EPA is promulgating an opacity limit of 10 percent, which we conclude represents the MACT floor level of performance, which is the minimum stringency allowed by the CAA section 112(d).

Comment 5:

[1590] Commenters disagreed with the conclusion that all slag processing operations are capable of meeting stringent new visible emissions on a consistent and cost-effective basis, or that opacity limits for slag pits, handling, storage and processing are supported by the EPA's analysis because the EPA significantly understates the compliance costs of achieving the 2023 Proposal's opacity limits. They acknowledged the EPA's cost analysis estimates that the WP that the Agency believes to be capable of achieving the proposed opacity limits will cost an industry-wide total of $190,731 in labor, $562,774 in capital, and $117,087 in annual costs, with a total annualized cost estimate of $307,818. They stated given that the cost to install a single water spray system is at least approximately $250,000 for a single slag pit, without even factoring in the likely costs needed to adopt other control measures, the EPA's cost estimates are significantly understated.

Commenters noted the use of dust suppression equipment (e.g., water spray cannons) is not feasible in all situations for a variety of reasons, including site configuration. They stated most importantly, safety issues must be considered on a case-by-case basis. Commenters asserted that dust suppression equipment can interfere with operator visibility as the generated steams and mists can obscure sightlines, particularly with respect to the large equipment and vehicles needed in the slag operations, such as, front-end loaders and slag transport vehicles. They stated moreover, the use of water sprays may result in safety issues in some locations related to icy conditions and standing water, as a result, to achieve the proposed opacity limits, some facilities may need to construct building enclosures, if feasible, which can exceed $1 million per facility. Commenters suggested that to be meaningful, the EPA should prepare site-specific cost estimates for each mill, as the potential compliance costs will vary significantly based on the factors noted above and as detailed in AISI/USS's comments. They stated at minimum, the Agency should assess the costs of achieving compliance across a variety of different configurations for slag operations, each of which are unique to the mills at which they are situated.

Response 5:

The EPA is not finalizing the BTF opacity limit for slag processing, handling, and storage and is instead revising the opacity limit from 5 percent to 10 percent (6-minute average) in the Final Rule. The 300+ readings of opacity data collected from the 2022 section 114 collection requests indicates that none of the II&S facilities have VE above an average of 10 percent opacity. The EPA has identified slag handling, storage, and processing operations as a previously unregulated source of HAP emissions. Therefore, pursuant to the *LEAN* decision and CAA section 112(d)(2)/(d)(3), the EPA is establishing emissions standards for this previously unregulated source. In this action, the EPA is promulgating an opacity limit of 10 percent, which we

conclude represents the MACT floor level of performance, which is the minimum stringency allowed by the CAA section 112(d).

The use of fog systems for reducing emissions was verified by vendor experience in similar industries. According to the information collected from the 2022 section 114 request, most facilities already use water sprays in their slag handling, processing, and storage operations.

Comment 6:

[1590] Commenters disagreed with the conclusion that all slag processing operations are capable of meeting stringent new visible emissions on a consistent and cost-effective basis, or that opacity limits for slag pits, handling, storage and processing are supported by the EPA's analysis, because the EPA's cost-effectiveness analysis is skewed. They stated the EPA's asserted cost-effectiveness ratio to meet the 5 percent opacity standard of $41,490 per ton of HAP reductions is dramatically understated. They maintained the EPA's cost-effectiveness analysis is compromised by the lack of quantifiable emissions and potential emission reductions from unmeasurable and intermittent slag operation emissions, as well as the lack of a meaningful and realistic cost analysis that accounts for the high variability in slag operation characteristics across the industry. They noted it is imperative that the EPA collect actual data and generate a robust analysis of estimated emission reductions and costs before moving forward with any final opacity limits for slag operations. Commenters said as detailed in AISI/USS's comments, a more realistic cost-effectiveness analysis shows that the 2023 Proposal would result in costs of several million dollars per ton of HAP reduced, an amount that is well-beyond reasonable.

Response 6:

The EPA is not finalizing the BTF opacity limit for slag processing, handling, and storage and is instead revising the opacity limit from 5 percent to 10 percent (6-minute average) in the Final Rule. The 300+ readings of opacity data collected from the 2022 section 114 collection requests indicates that none of the II&S facilities have VE above an average of 10 percent opacity. The EPA has identified slag handling, storage, and processing operations as a previously unregulated source of HAP emissions. Therefore, pursuant to the LEAN decision and CAA section 112(d)(2)/(d)(3), the EPA is establishing emissions standards for this previously unregulated source. In this action, the EPA is promulgating an opacity limit of 10 percent, which we conclude represents the MACT floor level of performance, which is the minimum stringency allowed by the CAA section 112(d).

7.2.6 Cost impacts of bell leak standards

Comment 1:

[1631] Commenters stated for BF bell leaks, the EPA gives an estimated cost of $935,000 per year for the entire category and $120,000 per facility, resulting in an estimated 31 tpy reduction in HAP metal emissions. They indicated this equates to an estimated cost effectiveness of $30,000 per ton of HAP metals according to the EPA.

[1631] Commenters stated the proposed requirements to minimize bell leaks should be revised to avoid cost-prohibitive disruptions in operations and unnecessary compliance burdens. They said

the proposal underestimates costs for the lost production time associated with a more frequent bell replacement schedule to minimize bell leaks. Commenters maintained the 2023 Proposal estimates that the industry would incur $2,138,542 in capital costs and total annualized costs of $934,555. They stated the EPA estimated that small bells would last for six months, and the total capital associated with replacing small bells would be $56,277 per furnace and $225,110 for large bells. Commenters asserted that based on the industry's knowledge of repair and replacement costs, a more accurate estimate of the cost to replace a small bell lower half seal is approximately $500,000.

[1631] Commenters maintained that facilities already replace seals as necessary during scheduled outages. They indicated under the 2023 Proposal, facilities would need to shut down within a four-month period, regardless of when the next regular outage is scheduled, which would be disruptive for business and result in significant financial impacts, which the EPA did not consider. Commenters stated the early, additional bell replacements can take up to 16 days with outage length requirements varying widely; however, and scheduling of such projects must be consistent with other maintenance work. They made known that due to the extensive planning required and long downtime, the only time a replacement would typically occur outside of a regularly scheduled outage would be if there was an emergency failure.

[1631] Commenters opined the repairs to and refurbishment of the bell and seal facing require specialized equipment and high precision and cannot be performed while the blast furnace is in service. They stated the bell seal seating surface is a one (1) foot-wide band of hard surfacing applied to a machined groove in the bell. They revealed this section of hard surfacing is machine-finished to a 0.5 inch thickness with a 32 or finer microinch finish. They maintained that the gap between the bell and hopper seats are verified to be parallel both inside and outside within 0.003 inch. They indicated that just as machining capabilities have dramatically advanced with computer aided design (CAD) enhancements, these machining tolerances have greatly improved since the EPA's reliance on bell leak emission overestimates based on 1970s references as discussed in more detail in the Industry's UFIP Memorandum. Commenters stated the seals are only replaceable in the sense that the entire large bell can be removed and refurbished to these exacting standards at a specialized facility, which is a very involved and lengthy process. They said to accomplish this, the furnace must be blown down, and the bell must be taken to an offsite facility.

[1631] Commenters expressed the EPA should have considered not only the costs of purchasing more bells over time, but also lost revenue due to the added downtime that it would not otherwise incur but for the requirements of the 2023 Proposal. They claimed based on industry's more realistic estimates, the total capital costs are more than ten times higher at $26 million industry-wide and the overall annual costs are an astonishing $266 million per year—every year—to reduce a negligible, unnoticeable quantity of metal HAPs.

[1631] Commenters stated compounding errors of this sort offer very low or no confidence in the EPA's emissions estimate before the MACT or after implementation of the MACT, or costs to comply with the 2023 Proposal. The only reasonable way to improve confidence in these analyses would be to complete furnace-specific cost estimates and more rigorous studies on the effects of actions that could be taken to reduce bell leaks, and to improve data collection studies

on unmeasurable pollutants. They stated that until the EPA undertakes a more robust analysis of the expected emission reductions and costs, the Agency should not move forward with the proposed opacity action limit and bell replacement requirements.

Commenters claimed that based on industry's UFIP Memorandum included as Appendix A, industry does not anticipate any determinable emission reduction that would result from the proposed WP standards given the already low emissions from bell leaks. The EPA cannot move forward with the proposed WP standards given the lack of any resulting emission reductions at an enormous expense.

Response 1:

For large bells, the EPA is finalizing a requirement that if the bell leak emissions exceed 20 percent opacity based on an average of three instantaneous and consecutive interbell relief valve openings, the facility has the opportunity to implement operational or other corrective actions to get the opacity to decrease below 20 percent. If the opacity no longer exceeds 20 percent after corrective action is taken, the bell seal would not be required to be repaired or replaced at that time. The EPA anticipates that this addition to the Final Rule will result in fewer large bell repairs and replacements than the Proposed Rule would have required.

Once it is determined that a large bell seal must be repaired or replaced, owners or operators have four months to repair or replace the bell seal. The EPA believes that this should allow for the repair or replacement to be scheduled alongside a planned production outage, which would not result in a loss of production or revenue due to the requirement to repair or replace the bell seal. The EPA disagrees that the rule requirement for repairing or replacing bells will result in lost revenue.

In response to the section 114 questionnaire, no II&S facilities indicated that they experienced an average opacity above zero from bell leaks before the seals were last replaced. Therefore, the EPA does not believe the estimated frequency of bell seal replacements in the cost estimates was overestimated.

For the capital costs per bell seal replacement, the EPA used the same cost estimates that were used in the 2019 work practice cost calculations.

7.2.7 Cost impacts of beaching standards

Comment 1:

[1631] Commenters stated the proposed requirements for iron beaching should be revised. They stated the 2023 Proposal underestimates the costs for installing enclosures and using a CO_2 suppression system to minimize emissions from beaching events. Commenters claimed that facilities opting for the enclosure option would need to be retrofitted or re-designed to effectively and safely meet the intent of the WP suggested even though the EPA estimates that no capital costs would be incurred to construct an enclosure and that the overall annual costs would be $54,629. Commenters indicated that the EPA stated in its supporting document that the Agency assumed a beaching enclosure could be built from on-site materials and that costs would be incurred only for taxes, insurance, and administrative costs.

[1631] Commenters stated for the beaching of iron from BFs, the EPA gives an estimate of $55,000 per year for the entire category and an annual cost of $6,800 per facility.

[1631] Commenters stated 2023 Proposal overestimates emission reductions associated with beaching-related WP. They noted the EPA estimates industrywide emissions from beaching operations at 40 pounds per year (lbs/yr) of HAPs. The EPA estimates that if the proposed WP standards are implemented, emissions would be reduced by seven (7) lbs/yr industrywide, spread among eight (8) different facilities. Commenters asserted that if corrected emission factors are used to estimate emissions, the estimated baseline is closer to 20 lbs/yr, and the corresponding reduction lower at five (5) lbs/yr industrywide. In either case, commenters expressed that the emission reductions associated with the proposed WP standards would not be meaningful, especially when beaching occurs infrequently and represents a small fraction of overall HAP emissions in the source category.

[1631] Commenters stated the 2023 Proposal underestimates the cost-effectiveness rate for minimizing de minimis HAP emissions from beaching activities yet remains unreasonably expensive and unjustified. They stated based on the EPA's estimated removal of 7 lbs/yr of HAPs and an annualized cost of $54,629, the EPA's cost-effectiveness rate is $15.7 million per ton of HAPs removed. Even if the reductions are overestimated and the annualized costs are underestimated, this remains an incredibly high cost-effectiveness rate, especially given the extremely low potential for emissions reductions of 7 pounds. Under Section 112(d)(2) and 112(h), the EPA must take costs into account, and EPA has not even attempted to justify these extreme costs.

[1631] Commenters asserted the 2023 Proposal's cost estimates are incorrect and leave out important costs, on top of making inappropriate assumptions, such as, the EPA assumes that facilities would use scrap metal to build an enclosure. They stated this assumption ignores that scrap steel is not necessarily structurally sound, such that material costs would be greater than the EPA's estimate. They maintained a more realistic cost for a three-sided structure would be $1 million. Commenters also communicated that the EPA did not provide cost estimates for a CO_2 suppression system, yet if a facility has limited space and could not enclose their beaching operations, the facility would be required under the 2023 Proposal to use such a system. They provided that when the Burns Harbor facility installed a CO_2 suppression system, the cost was $1.8 million. They further provided that even where existing buildings have been considered for retrofit for bringing outdoor beaching activities under roof, the cost estimates have been substantial. Commenters stated industry's more realistic cost estimations based on actual costs incurred to construct enclosures and, if that is not feasible, to install CO_2 suppression systems, capital costs would be $4.8 million, and overall annual costs would be $503,086 per year.

Response 1:

According to the information received from the 2022 section 114 collection, four of the six facilities that had beaching operations in 2022 have a full or partial enclosure for beaching processes. For the two facilities that would need to implement a work practice to meet the finalized work practice standards for beaching operations, the EPA used the same cost estimates for enclosures that were used in the 2019 work practice cost calculations, assuming that facilities would opt for an enclosure in favor of installing CO_2 suppression systems.

7.2.8 Cost impacts of BOPF shop fugitive standards

Comment 1:

[1631] Commenters have developed cost estimates, which are included in the Industry's UFIP Memorandum, and these estimates significantly exceed the EPA's remarkably low estimate of only $500,000 in capital costs for the entire industry—all eleven BOPF shops—and $51,400 per year in recurring costs, which reflects information from the EPA's 2023 UFIP Memo. They also reiterated additional information from the 2023 UFIP Memo stating the EPA's estimates for total capital and operating costs for both BOPF shops and BF casthouses are not only generic for all BOPF shops, but estimates are also generic and exactly the same for all BF casthouses too—despite their differences. Commenters argued this generic approach, coupled with the very low estimates, provides a prima facie case that the Agency's analysis is arbitrary and capricious. They asserted that this generic approach established that no one at the Agency studied or evaluated the steps needed for compliance or took into account the uniqueness of each individual shop or even each UFIP category.

[1631] Commenters disclosed that industry took a much different approach and developed shop-specific estimates for capital costs and annual operating expenses. They revealed estimates orders of magnitude above the EPA's estimates, resulting in significantly different cost-effectiveness rates. They stated this is because each BOPF shop encompasses a number of individual operations that must be taken into account when assessing technical and economic feasibility of changes that would be needed to comply with the proposed opacity and WP standards.

They maintained that each of the 11 BOPF shops is unique due to the mix of basic oxygen process vessels, type of combustion, whether a vessel is top blown or bottom blown, and the type of primary PM control method being used. Commenters stated that in addition, BOPF shops have roof vents at the top of the shop that are uniquely designed on a shop-specific basis to allow heat generated and released by the steel manufacturing process to be released by thermal buoyancy. They stated the various openings at the lower levels and shop floor are necessary to aid that buoyancy effect. Commenters claimed those unique characteristics led to individualized cost estimates for each BOPF shop, including shops at the same facilities.

[1631] Commenters explained that there are two basic practices for oxygen steelmaking—top blowing and bottom blowing.

- With top blowing, oxygen is injected through a lance inserted through the vessel mouth (top blown) which reacts with the hot metal, allowing the carbon and silicon in the iron to be oxidized. Combustion products and fumes are exhausted from the vessel mouth to a particulate control device.
- With bottom blowing, oxygen and fluxing agents are injected through the furnace bottom instead. Carbon and silicon in the iron are oxidized, and combustion products and fumes are exhausted through the vessel mouth to a particulate control device.

Commenters stated that in addition to those differences, there are two types of combustion that the MACT recognizes with two different subcategory PM limits.

- With full combustion (open hood), combustible gases emitted from the vessel mouth (CO, H2) are oxidized in the capture hood and cooled by water evaporation in the water-cooled hood before entering the particulate control device.
- With suppressed combustion (closed hood), combustible gases emitted from the vessel mouth (CO, H2) are captured, cooled by water evaporation in the water-cooled hood, particulate removed in an airstarved condition, and the gases are oxidized in a flare.

Commenters said BOPF shops use open hood or closed hood PM control systems engineered and designed to meet specific capture and control volumes.

- Open hood systems include wet scrubbers and electrostatic precipitators as the PM control device.
- Closed hood systems include suppressed combustion systems with wet scrubbers.

They stated each BOPF shop's primary and secondary emission system is unique in sizing and physical arrangement based on extensive site-specific engineering to facilitate proper ventilation for the activities in each individual shop. Commenters indicated that the exhaust is not a forced exhaust, and the volume of gases vented through thermal buoyance varies with process operations within the shop and are different hourly, daily, and seasonally depending on ambient temperature and barometric pressure. They stated further, the various openings at the lower levels and shop floor aid the thermal buoyancy effect. Commenters declared the volume of gases vented is a function of the building height, vent area, temperature of the gases, and resistance of inflow ambient air entering the building; therefore, the area of a visible emissions plume that may exit the roof monitors or other vents is not constant and obviously varies from shop to shop.

[1631] Commenters explained the potential for uncaptured fugitive emissions from hot metal charging to the BOPF is not only related to the secondary fugitive capture volume at the hood, but also to hot metal pour rate, metal temperature, system flow balancing for simultaneous process operations, and physical placement of the hood. They stated the building structural components' relationship to the furnace determines the placement of the charge hood and the ability to effectively capture emissions. Commenters reiterated that each furnace/building at each site is unique, and the primary and secondary capture system currently installed is designed for each furnace; thus, existing BOPF control systems have been optimized to minimize emissions. They stated in many cases, increasing hood capture volume, where feasible to do so, has been shown to be counterproductive. Commenters indicated that increasing hood inflow volume increases the static pressure loss and creates disturbed flow patterns which degrade hood capture effectiveness; thus, the simplistic approach of increasing capture volume on which the EPA relies, if it were feasible, does not necessarily result in a decrease in fugitive emissions.

Response 1:

After considering comments, the EPA now recognizes some operations may need to make more significant changes than we anticipated at proposal to meet the 5 percent opacity standard at all times for the BOPF shop. After revisiting the 2022 opacity data from the shops provided to the EPA as part of the CAA section 114 information requests, EPA has concluded that we do not have sufficient time to fully analyze the data submitted in order to set a revised opacity standard for the BOPF shops. This is described in more detail in Section III.B.2. in the preamble for this final rule.

The capital cost estimates for BOPF shop fugitives are for a camera to be used with EPA Method Alt-082 opacity testing. The Final Rule requires opacity testing of BOPF shop fugitive emissions with either EPA Method Alt-082 or EPA Method 9. The camera was included in the costs for this emission source as a conservative estimate in case any facilities were to choose to comply to the opacity testing requirement using EPA Method Alt-082, but no facilities are required to install these cameras.

Comment 2:

[1631] Commenters stated the 2023 Proposal's overstatements of emissions and emission reductions and understatements of BOPF shop compliance costs demonstrates that the 2023 Proposal is not cost-effective and will have broad adverse economic effects.

They stated the 2023 Proposal estimates total capital costs of $495,241 and overall annual costs of $496,955, industrywide, for compliance with the new opacity and WP standards applicable to BOPF shops. Commenters stated as explained in Industry's UFIP Memorandum included in Appendix A, Industry has estimated BOPF-shop-specific costs for compliance based on the changes they determined would be needed to meet the proposed WP standards and reduced opacity limit of 5% (3-minute average). Commenters stated industry estimates total capital costs of $1.2 billion and total annualized costs of over $204 million.

Response 2:

The EPA disagrees with the commenter's assertion that baseline emissions and emission reductions were overstated and the cost estimates to meet the opacity limits for BOPF shop fugitive emissions were understated.

The EPA used similar emission factors to those described in the 2019 UFIP Emission Factor Memo that were used to estimate baseline emissions from II&S facilities in 2019. The baseline emission estimate calculations for this rulemaking were adjusted using updated production data for each unit. Baseline emission estimates were also lowered based on information about work practices that are currently in use by each facility according to the 2022 section 114 collection.

After considering comments, the EPA now recognizes some operations may need to make more significant changes than we anticipated at proposal to meet the 5 percent opacity standard at all times for the BOPF shop. After revisiting the 2022 opacity data from the shops provided to the EPA as part of the CAA section114 information requests, EPA has concluded that we do not have sufficient time to fully analyze the data submitted in order to set a revised opacity standard for the BOPF shops. This is described in more detail in Section III.B.2. in the preamble for this final rule.

Comment 3:

[1631] Commenters stated based on EPA's estimated overall annual costs $496,955 industrywide for all 11 BOPF shops to reduce 25 tpy of HAPs, the resulting cost-effectiveness rate is $19,636 per ton of fugitive HAPs removed. They expressed this cost-effectiveness rate is severely underestimated, is misleading, and should not be relied upon for purposes of this 2023 Proposal.

Commenters stated the EPA's analysis suffers from three major areas of potential uncertainty that, when compounded, render the EPA's estimates unreliable for rulemaking purposes, and that is particularly so for this UFIP source category.

- First, there is no way to quantify with high confidence rates of "unmeasurable" or "intermittent" fugitive emissions from BOPF shops.
- Second, there is no way to quantify with high confidence the expected PM or HAP reduction rates expected based on the proposed work practice standards and new opacity limit.
- Third, EPA should accurately prepare site-specific costs for each unique BOPF shop.

[1631] Commenters stated in short, these compounding errors lead to estimates with very low or even no confidence in the 2023 Proposal's estimate after implementation of the MACT or for the estimated compliance costs. They stated the only reasonable way to improve confidence in these analyses would be to complete shop-specific cost estimates and more rigorous studies on the effects of actions that could be taken to meet the new opacity and work practice standards and to improve data collection studies on unmeasurable pollutants.

[1631] Commenters referenced industry's estimated annual costs of $204 million and industry's estimated reduction in HAP emissions of 3 tpy, the resulting cost-effectiveness rate is $78 million per ton of HAPs removed, which is unreasonably expensive—making the proposed reduction in opacity standard and WP standards unnecessary under Section 112(d)(6). They stated even if industry's estimated costs were applied to the 26 tpy reduction that the EPA estimates, the cost-effectiveness rate remains unreasonably expensive at $8 million, and, if applied to the corrected emission reduction of 11 tpy, the cost effectiveness rate is more than double that amount at $18 million per ton of HAPs removed. Commenters stated in summary, cost-effectiveness rates between $8 million and $78 million are simply too expensive to warrant the small reduction in emissions, especially when the best performers cannot meet the proposed 5% opacity limit (3-minute average). They indicated that increased Method 9 VE testing, such as once per quarter, and maintaining the current opacity limit of 20% (3-minute average) is the only revision reasonably demonstrated for BOPF shops.

Response 3:

The EPA used engineering judgement to develop emission reduction factors for each work practice and for each facility. When developing emission reduction factors, the EPA used information received in the 2022 section 114 collection to determine which work practices are already in use at each facility and which work practices would need to be implemented to meet the Final Rule requirements. The EPA also compared information about work practice standards utilized at each facility to the opacity data for each UFIP source at each facility to determine which work practices may result in more efficient emission reductions than others.

After considering comments, the EPA now recognizes some operations may need to make more significant changes than we anticipated at proposal to meet the 5 percent opacity standard at all times for the BOPF shop. After revisiting the 2022 opacity data from the shops provided to the EPA as part of the CAA section114 information requests, EPA has concluded that we do not have sufficient time to fully analyze the data submitted in order to set a revised opacity standard

for the BOPF shops. This is described in more detail in Section III.B.2. in the preamble for this final rule.

7.2.9 Cost impacts of BF casthouse fugitive standards

Comment 1:

[1631] Commenters stated the 2023 Proposal severely underestimates the costs associated with changes that would be needed at the BF casthouses to comply with a 5% opacity standard (6-minute average). They mentioned that the EPA has estimated costs that would be incurred by industry in order for the BF casthouses to meet a 5% opacity standard (6-minute average); however, the EPA's attempt to estimate expenses for certain activities fails to explain how the Agency derived those estimates in the record. They further stated the operations in BF casthouse are subject to immense numbers of variable operations, and there are other parameters that could affect visible emissions, including the weather. They stated that to effectively meet the 5% opacity, the control scheme needs to essentially be designed to have no visible emissions at any time.

[1631] Commenters stated that even though some changes could be made that would have some appreciable effect to reduce PM, there is no direct tie for any particular actions that provide assurance that, if those actions are taken, then the 5% opacity standard could be met at all times; thus, a BF casthouse would most likely need to install additional PM capture and control devices to meet the 2023 Proposal. They asserted that the cost to apply this type of control will be high and will involve the addition of at least one large fabric filter device.

[1631] Commenters maintained that given the relatively low inlet concentration of fugitive PM and HAP emissions being sent to this control device, appreciable incremental reductions beyond those achieved through WP alone are expected to be negligible over the course of a year. Commenters asserted that while a full BF casthouse enclosure is needed to meet a 5% (3-minute average) opacity limit, this will not necessarily result in a meaningful reduction in PM and HAP emissions—the emissions essentially go from being a fugitive emission to a stack emission. Commenters stated the PM MACT limit for baghouses is 0.01 grains per dscf; if we assume a baghouse air flow rate of 200,000 cubic feet per minute and converted that rate to a pounds per hour and tpy rate, any reduction in fugitive PM and HAP emissions will likely be significantly offset by the new baghouse emissions. Commenters stated this is in part because there are already controls in place and the 2023 Proposal is intended to address the remaining fugitive emissions—that are low in mass and in concentrations. They explained that the lower the mass attempted to be collected, the worse the baghouse removal efficiency—so a high level of removal is not expected for BF casthouse fugitive emissions when considering the new high-volume baghouse PM emissions. They stated while the EPA presumes an average 32% reduction in PM and HAP emissions based on BF casthouses meeting the proposed opacity standard, the Agency has provided no technical basis for that.

[1631] Commenters explained that the EPA has estimated significantly different ranges of costs, as reflected in the EPA's 2023 UFIP Memo and reflects that the EPA made the same generic estimates for each BF casthouse, and also for each BOPF shop.

[1631] Commenters asserted that based on these per-unit cost estimates, the EPA calculated the total costs industry-wide, reflecting $765,374 in total capital, and $739,896 in overall annual costs, which industry maintains these emissions are not accurate and not reflective of the changes that would need to be made in an effort to meet a 5% opacity standard (6-minute average). Commenters, specifically Industry, expressed concern that even after spending large sums of money to try to reduce opacity, there is no assurance that BF casthouses would be capable of meeting a 5% opacity standard at all times and under all conditions.

[1631] Commenters stated there are multiple technical shortcomings in the 2023 Proposal's estimated costs to support the proposed new reduced BF casthouse opacity limits:

- First, the analysis fails by assuming that the BF casthouses can achieve a 5% opacity limit.
- Even if they can be achieved, the EPA has significantly underestimated the costs to implement solutions that industry will be required to undertake in order continually comply with new opacity and WP standards. For example, the proposed opacity limit would require massive capital investment and impose operating costs to build additional control systems and structures neither contemplated nor estimated in EPA's analysis.
- The 2023 Proposal also oversimplifies basic technical implementation and feasibility matters in terms of enclosing a casthouse as a compliance method.
- While not mentioned in the preamble, the EPA's UFIP Memo recognizes that additional control devices and changes to ventilation systems may be needed.
- Several practical limitations impact and may even preclude the ability to do this, however. For example, for casthouses with hoods and fugitive capture, placing the building under negative pressure will defeat the point of emission capture effectiveness.
- The column loading from grade to roof decreases in the casthouses and the columns would need to be strengthened by overlaying plate on the column face. This work cannot be completed when the blast furnace is operating for safety reasons. The work would also result in significant production loss not contemplated in the costs to industry.
- The cost of strengthening the building to counter this strain could add up to 25% to the capital expenditures and extend completion time. In addition, the estimated exhaust volume will be different for each casthouse based on building volume and heat sources in the building. The expected volume would be about 6 exchanges per hour.
- The expected dust loading into a proposed fabric filter will be lower than that typically expected for a membrane fabric filter design. Inlet particle size would be below 2.5 micrograms and removal efficiency low. Industry expects the inlet particle attenuation coefficient to be high, resulting in a very low concentration-to-opacity relationship. In addition, inlet particle loading would not be continuous, and a dust layer could not be maintained on the media surface resulting in over-cleaning the bags. This would cause fabric failure and particle penetration.

[1631] Commenters stated taking all of this into account, and as explained in more detail in the Industry's UFIP Memorandum included as Appendix A, industry has estimated compliance costs for each of the 14 BF casthouses that would be subject to the 5% opacity limitation. They revealed that the total capital investment for all 14 BF casthouse is $217 million; in addition, industry estimates total operating costs of $23 million and overall annual costs of $44 million.

[1631] Commenters stated based on industry's estimated overall annual costs of $44 million and their estimated level of HAP removal at 0.2 tpy, the cost-effectiveness rate is $234 million per ton of HAPs removed. They indicated if industry's cost estimates are applied to the corrected emission reduction rate of 5 tpy, the cost-effectiveness rate is still very expensive at $9 million per ton of HAPs removed. They stated the more realistic cost estimates lead to cost-effectiveness rates that are all unreasonably expensive and unjustified, including $4 million per ton if the EPA's modest cost estimate are used combined with industry's very low expected rate of emission reduction. They stated the EPA cannot move forward with the proposed opacity standards for BF casthouses given this unprecedented level of expense for reductions of between 0.2 and 9 tpy that would not be meaningful in any sense.

[1631] Commenters stated that the BF casthouse compliance costs demonstrate that the proposal is not cost-effective and will have broad adverse economic effects. They asserted that the EPA's cost estimates are well below what industry estimates. They opined that the EPA has failed to take into account facility-specific design constraints and what changes would need to be made to reduce fugitives to a degree that the 5 percent opacity standard could be met at all times. Commenters stated that industry maintains their estimates are more accurate. Commenters stated industry has developed detailed, reasonable, and realistic cost estimates based on decades of experience and site-specific retrofit analyses, industry estimates total capital costs of $217 million—significantly more than the EPA's modest estimate of $765,373.

Response 1:

After considering comments, the EPA now recognizes some operations may need to make more significant changes than we anticipated at proposal to meet the 5 percent opacity standard at all times for the BF casthouse. After revisiting the 2022 opacity data from the shops provided to the EPA as part of the CAA section114 information requests, EPA has concluded that we do not have sufficient time to fully analyze the data submitted in order to set a revised opacity standard for the BF casthouses. This is described in more detail in Section III.B.2. in the preamble for this final rule.

7.3 Economic impacts

7.3.1 Potential impacts on manufacturing and supply chains

Comment 1:

[1631] Commenters stated the EPA significantly underestimates compliance and economic costs to industry and consumers and fails to compare those costs with the diminished incremental benefits of the 2023 Proposal. They ascertained that despite the imposition of these significant and potentially disruptive costs to the steel industry, the 2023 Proposal does not fully consider the economic impacts of these costs on industry or the broader market. They stated in fact, the 2023 RIA acknowledges these glaring deficits, suggesting instead that a comparison of costs with the revenue of firms owning II&S facilities is an adequate consideration approach to considering costs.

Commenters opined that this approach runs afoul of any appropriate weighing of the incremental benefits and costs of the proposed actions based on the following:

- First, by failing to assess the full impact of the proposed requirements on industry, including the impacts on production changes or closures as acknowledged by the EPA, no decisionmaker in the government or stakeholder, including consumers, can assess the potential for broader economic harm or emission dis-benefits. As discussed elsewhere in these comments, lost US steel production and closure of US plants could stall the energy transition and the environmental benefits predicated on that transition. The Agency's failure to conduct this analysis prevents any evaluation of these impacts.
- Second, comparing a diminished, incomplete estimate of compliance costs against the revenues of the firms owning II&S plants would green-light any regulatory measures as long as the firms have sufficient revenues. The comparison does not provide insights as to whether the incremental benefits of regulation are worthy of the costs that society will incur.

Response 1:

The EPA believes that comparing estimated annualized costs of compliance to parent company sales provides meaningful information about the ability of a company to absorb the costs of environmental controls, particularly in the absence of detailed facility and firm-level financial data. We agree that this analysis is limited, as discussed in the Economic Impact Analysis for the proposed rulemaking. For this reason, we provided a partial equilibrium economic analysis to assess potential impacts of the rulemaking on the U.S. iron and steel product markets. As noted by the commenter, the EPA has previously considered cost-effectiveness rates during rulemakings for other industries, and similar measures have been presented with respect to this rulemaking. However, this is only one consideration and is not required under EO 12886, even for all "significant" rulemakings.

Comment 2:

[1631] Commenters stated the 2023 Proposal would needlessly adversely affect the energy transition and would delay implementing the Administration's IRA. They stated production downtimes needed to install new equipment, the tight compliance deadlines in the 2023 Proposal and the likelihood of less efficient production and higher costs can all translate to lower overall US production at a time when domestic demand is increasing. Commenters stated that reliance on domestic steel sourcing is needed to qualify for tax subsidies aimed at accelerating the transition. They made known the IRA specifies that iron and steel must be compliant with the Federal Transit Administration's Buy America regulations which require that all iron and steel used in a project must be manufactured in the US. They revealed that bonus credits also require domestic production and that under the IRA, projects that use 100% American steel and iron will be eligible to increase their credit by 10 percentage points if they are claiming the investment tax credits (ITCs) or production tax credits (PTCs).

Response 2:

When estimating compliance cost, time loss and labor hours are commonly included in the estimated cost of control installation, and the EPA has received no information to suggest that the installation of controls at the affected and regulated facilities would result in downtime of

significant enough magnitude to result in significant and sustained reductions of productive capacity or instability of the domestic market. the EPA considers the methodology used to calculate capital and total annual cost to be a reasonable approach to estimating costs for the purposes of this rulemaking.

Comment 3:

[1489] Commenters stated our over-reliance on China has destroyed the ability of the American worker to make a good living and government regulations simply continue to increase the cost to operate in the USA. They stated there are less than 10 businesses in the entire continental USA where they are able to get anything casted or forged, which ultimately means they have to raise prices to the federal government, or if you don't do business with the federal government, most places go to China, India or Pakistan to accomplish this. Commenters stated ironically none of those countries have any regulations on steel or iron mills at all, and generally despite what their government wants to put out, they go wide open especially for critical businesses and infrastructure like iron and steel mills. They indicated to power these factories and plants, all three countries are building brand new bigger than ever coal fired plants that have no to minimal filters on the output side of things which means that when the EPA tries to reduce localized pollution by the 2023 Proposal, the everyday American Workers including union workers, disadvantaged populations such as the Black American and/or Native Indigenous American communities and other groups of Americans who struggle to survive are the ones hurting.

They stated additionally, the actual pollution rate is not being reduced, it is increasing by double because those three countries have no regulations on emissions and just don't care, so before asking for proof, go to the factories in those countries in question unannounced and observe what these commenters are speaking about.

Response 3:

As part of the EPA's analysis of the economic impacts of the rule, compliance costs were compared to costs for each domestic producer of iron and steel. The results and summary of that comparison are included in the regulatory impact analysis of the rule. With annual compliance cost estimates ranging from 0.017% (U.S. Steel) to 0.022% (Cleveland Cliffs) of annual revenue, the rule is not expected to result in significant changes to the trade composition of the market. Therefore, the EPA believes that the rule will result in emission reductions similar in scale to those stated.

Comment 4:

[1720] Commenters acknowledged that manufacturers require reliable access to supply chain inputs, including iron and steel, to produce products that are vital to the US economy. They stated capitalizing on natural resource potential, carried out in a responsible and sustainable manner, and making ecologically efficient use of natural resources to ensure long-term access to those resources is critical to both competitiveness and ensuring the highest levels of environmental stewardship, contributing to increased productivity, lower costs, value-added and new products. They affirmed that iron and steel play a critical role in the manufacturing supply chain and are essential for the US to remain competitive in the global manufacturing economy.

Response 4:

When analyzing the impact of proposed actions on the composition of the regulated market and the market shares of regulated facilities, the EPA commonly uses a cost-to-sales ratio to assess the reaction of those facilities and their parent companies. While this is an imperfect measure, it is useful in markets where detailed facility-level information is unavailable. For this proposed action, the annual compliance costs are estimated to be 0.017% to 0.022% of annual revenue for the affected parent companies. These small costs suggest that the impact on the prices and market shares in the domestic market should be small, and the EPA expects that the rule will not cause stability concerns for domestic manufacturing.

Comment 5:

[1720] Commenters acknowledged that manufacturers are committed to environmental stewardship, as well as to creating jobs, expanding opportunity and improving the quality of life for everyone. They stated the US steel industry is amongst the cleanest in the world. They affirmed that the integrated producers make the advanced grades of steel necessary for vehicle manufacturing and transportation systems, the electric power grid, energy generation and other key markets. They stated the steel industry is a critical driver for other sectors in reducing carbon emissions. They communicated that steel is an essential component in many technologies necessary to decarbonize the US overall, such as steel framing for solar electric installations, steel battery enclosures and body panels for electric vehicles and steel support towers for wind turbines.

Response 5:

As noted in the EPA response to the previous comment, the EPA attempts to understand the full impact of proposed rules on the regulated market as well as domestic environmental quality. When analyzing the impact of proposed actions on the composition of the regulated market and the market shares of regulated facilities, the EPA commonly uses a cost-to-sales ratio to assess the reaction of those facilities and their parent companies. While this is an imperfect measure, it is useful in markets where detailed facility-level information is unavailable. For this proposed action, the annual compliance costs are estimated to be 0.017% to 0.022% of annual revenue for the affected parent companies. These small costs suggest that the impact on the prices and market shares in the domestic market should be small, and the EPA expects that the rule will not cause stability concerns for domestic manufacturing. The anticipated stability of the domestic market and market shares suggests that no significant environmental stewardship, job, or quality of life concerns are present.

7.3.2 Potential impacts on national security

Comment 1:

[1489] Commenters explained that since 2020, the EPA has been trying to implement a lot of things that they consider radical and detrimental not only to the health and security of America, but the EPA has created a huge national security issue all without our duly elected officials even muttering a word. They stated this 2023 Proposal along with the vehicle emission standards rule

promulgations are highly problematic and represent a serious overstep of a federal agency as well as endangering the wellbeing of everyday Americans and our country. They stated the largest issue here is moving operations overseas. Commenters stated that Ukraine is a great example of where the DOD is struggling to produce 155 shells because regulations and promulgations like these destroyed the industries due to increased cost and a bizarre willingness of greedy business leaders to move operations overseas where leaders can maximize profit all at the expense of everyday American Citizens.

Response 1:

As noted in the RIA and earlier responses, the associated costs on the steel industrial sector are minimal. Neither of the affected parent companies are expected to be economically displaced, and the existing iron and steel facilities are not expected to close or substantially reduce production or production capacity as a result of this final rule. Therefore, we do not expect that the final rule will have any impacts on national security.

7.3.3 Potential impacts on projects using steel and iron for renewable and clean energy projects

Comment 1:

[1631] Commenters stated the domestic steel industry is key to a robust economy, to achieving the energy transition, and to national defense. They stated that the EPA found in the 2020 Final Action that all of the II&S facilities across the country operate in a manner such that HAP emission levels are protective of public health with an ample margin of safety. They also said in addition to this important finding, which is not being changed by this proposal, the US is the cleanest steel-producing nation in the world. Commenters stated that integrated producers make the advanced grades of steel necessary for vehicle manufacturing and transportation systems, electric power grid and energy generation, as well as other key markets and provided the following list:

- The steel industry is the critical enabler for other sectors reducing their carbon emissions. Steel is an essential component of the technologies necessary to decarbonize the U.S. overall, including steel framing for solar electric installations, steel battery enclosures and body panels for electric vehicles, and steel support towers for wind turbines.
- Integrated steel mills in the US are almost entirely fed by domestically sourced iron ore pellets rather than the sintered ore used in China and elsewhere to produce steel. The use of pelletized iron results in significantly lower emissions of CO2, as well as lower emissions of NOx, SO2, and PM.
- Energy efficiency remains a key focus of integrated producers’ environmental strategies, as evidenced by investments in renewable energy, and energy recovery from byproduct gases.
- Integrated producers have committed to partnering with hydrogen producers to use hydrogen in various steelmaking processes, including replacement of natural gas when it becomes commercially available in sufficient quantities, and partial replacement of coke by injecting hydrogen into BFs.

[1631] Commenters stated the 2023 Proposal would needlessly adversely affect the energy transition and would delay implementing the Administration's IRA. They restated that Section 112 is focused on achieving acceptable risk levels for listed HAP to protect public health with an ample margin of safety. Commenters said due to the efforts of the industry, implementation of the existing 2020 Final Action achieves that goal. They also stated the steel industry is also working to support the Administration's net zero/climate goals, which require significant supplies of steel.

They asserted steel is a critical component in the ten common sources of clean power. Commenters stated that according to Boston Metal, an engineering firm focusing on steel manufacturing, every new megawatt (MW) of solar power will require 35 to 45 tons of steel while every new MW of wind power will use 120 to 180 tons of steel. They stated these estimates align with recent findings from McKinsey and Company in their April 13, 2023 report entitled, The Resilience of Steel; Navigating the Crossroads which estimates demand for finished steel of approximately 40 metric tons per MW for solar and 150 metric tons per MW for wind.

[1631] Commenters stated regulatory actions that raise the cost of steel production and undermine its efficient production and availability could slow the energy transition and its overall promise of reduced emissions. They stated the risk to the transition is significant. Commenters communicated that according to an analysis from the Rocky Mountain Institute, the combined effect of the Infrastructure and Investment Jobs Act (IIJA) and the IRA will generate 39.7 million tons of new steel demand from now to 2030 just to help meet the demand created by the incentives of these laws to build renewables and the needed transmission and infrastructure. They also stated that according to Boston Metal, 1.7 billion tons of steel will be needed just to build enough wind turbines required to reach net zero by 2050.

Response 1:

We disagree with the commenter's assertion that EPA lacks authority to undertake additional residual risk assessments. The EPA has the discretion to conduct subsequent risk assessments if material new facts or information becomes available (e.g., the recent increase in estimated toxicity of ethylene oxide). With respect to this rulemaking, these low company-specific cost-to-sales ratios suggest that the impact on the prices and market shares in the domestic market should be small, and the EPA expects that the rule will not cause stability concerns for domestic manufacturing. The anticipated stability of the domestic market and market shares suggests that no significant concerns remain for the transition of the U.S. economy towards clean energy.

7.3.4 Potential impacts on critical infrastructure for national defense

Comment 1:

[1631] Commenters acknowledged the domestic steel industry is key to a robust economy, to achieving the energy transition, and to national defense. They stated the II&S production not only has a long history of supporting the economy but is also essential to the infrastructure and clean energy projects of the future.

Commenters shared that the US Government has designated steelmaking a key component of our national defense and critical infrastructure. They stated this is hardly surprising, given that the industry provides essential inputs to numerous domestic economic sectors, including defense, automobiles (including components for electric vehicles with recent advances in lighter weight steel), farm equipment, household appliances, food packaging, many types of buildings (including homes), energy (including renewables), and highway construction. They declared adverse impacts to the domestic steel industry will only exacerbate the flood of imported steel at a time when excessive steel imports have adversely impacted the domestic steel industry.

Response 1:

As noted in the RIA and responses to above comments, the associated costs on the steel industrial sector are minimal. Neither of the affected parent companies are expected to be economically displaced, and the existing iron and steel facilities are not expected to close or substantially reduce production or production capacity as a result of this final rule. Therefore, we do not expect that the final rule will have any impacts on national security.

As noted in the EPA responses in section 7.3.1, the EPA attempts to understand the full impact of proposed rules on the regulated market as well as domestic environmental quality. When analyzing the impact of proposed actions on the composition of the regulated market and the market shares of regulated facilities, the EPA commonly uses a cost-to-sales ratio to assess the reaction of those facilities and their parent companies. While this is an imperfect measure, it is useful in markets where detailed facility-level information is unavailable. For this final action, the annual compliance costs are estimated to be 0.017% to 0.022% of annual revenue for the affected parent companies. These small costs suggest that the impact on the prices and market shares in the domestic market should be small, and the EPA expects that the rule will not cause stability concerns for domestic manufacturing. The anticipated stability of the domestic market and market shares suggests that no significant environmental stewardship, job, or quality of life concerns are present.

Comment 2:

[1631] Commenters stated the Biden Administration's support for Buy American policies and actions to strengthen and secure critical supply chains in the US show recognition of the need for a government partnership with the steel industry that promotes economic growth while also preserving and protecting public health and our shared environment. They stated this is entirely consistent with the goals of the CAA, as reflected in Section 101(b)(1) to protect and enhance our nation's air resources while promoting the productive capacity of the nation. Commenters urged the EPA to work with other agencies and the Office of the President to ensure a cohesive strategy among all federal agencies to promote the steel industry with reasonable policies and regulations that ensure continued vitality of this essential operation. They stated as a matter of good government, and to ensure consistent and sound federal policy, they hope the numerous federal agencies that work to promote the steel industry will be consulted with respect to this regulation given the threat the 2023 Proposal poses to industry operations—operations which are essential to the US economy and the country's defense.

[1631] Commenters stated while the Administration has been extremely supportive of steel as both a necessity to our domestic economy and a competitive advantage more broadly, the 2023

proposal does not align with the basic principles outlined above. They asserted the CAA seeks to improve the country's air resources and to promote its productive capacity; therefore, in interpreting Section 112 and in making choices among permissible interpretations of the statute, the EPA needs to consider both of these goals and ensure that any adopted interpretations of the statute are consistent with intended results, from both an emission reduction and an economic impact perspective. They stated that as explained in our commenters, the EPA's current interpretation of the statute that the Agency has no choice but to issue many of the 2023 Proposal's regulatory requirements produces a result that Congress did not contemplate. They stated this should signal to the EPA that the Agency has taken a wrong interpretive turn and that the EPA needs to re-examine whether the statute really requires this result or if alternative permissible statutory interpretations would avoid this. Commenters elaborated on this important point in their comments submitted for the ongoing Taconite Iron Ore Processing rulemaking, which they incorporate here by reference (Comments of the American Iron and Steel Institute and United States Steel Corporation submitted July 7, 2023; EPA-HQ-OAR-2017-0664-0285; Taconite Comments).

Response 2:

See response to Comment 1 above.

Comment 3:

[1489] Commenters stated the largest issue with the 2023 Proposal is an overstep of the Agency which represents a major and national security risk that causes exceptionally grave danger to our nation, our military, and our ability to defend against tyranny and the injustice of authoritarians. They stated to make matters worse, we are unfortunately in a position right now where the world is on the brink of WW3 because of Russia invading Ukraine, and now Russia has teamed up with China despite China saying differently. Commenters questioned the EPA regarding overregulating their ability to live and defend themselves. They stated money from US industry should flow to union workers and other disadvantaged Americans, not go to the Chinese Communist Party which willing enables other countries to effectively use slave labor under the pretense of trade relations. They questioned whether the EPA honestly cared about reducing pollution or about destroying American industries that are vital to everyday life and to our national security. Commenters stated they care about all these things and also understands how obnoxious and toxic the output of these factories and mills can be at times.

Response 3:

See response to Comment 1 above.

Comment 4:

[Mass mail 1574; 1657; 1510; 1543; 1544] Commenters acknowledged the Department of Commerce has recognized that the domestic steel industry is vital to assuring our national security and maintaining critical infrastructure. They stated the US Steel's Gary Works and Midwest Plant, the United Steelworkers, US Steel, Cleveland Cliffs, the UAW, Monarch, other steelmakers, metal recycling businesses, related employees serving these industries and their respective suppliers have a strong commitment to our environment and to providing good paying jobs and other important economic benefits to our region. They opined it is critical that we

continue to maintain the balance of environmental responsibility and economic opportunity for our country, and not risk the future of our remaining manufacturing jobs and national security. They stated the Gary Works, Midwest, US Steel and Cliffs facilities are critical to our region and country. They asserted that working together, we can accomplish two important goals for future generations: protect our region's jobs and preserve our shared environment.

Response 4:

See response to Comment 1 above.

7.3.5 Potential impacts on global competitiveness

Comment 1:

[1631] Commenters stated the Department of Commerce has found the displacement of domestic steel by excessive quantities of imports has the serious effect of weakening our internal economy and national security. They asserted this is borne out by the fact that other steel-producing nations have increased capacity, to garner market share from US facilities, while domestic production has remained stable. Commenters stated as Commerce noted, China alone is able to produce as much steel as the rest of the world combined, and domestic producers, for the foreseeable future, will face increasing competition from other countries seeking to bolster their own economies. They acknowledged with sustainability being a main driver, American steel producers have worked diligently to reduce our environmental footprint even while producing the advanced and highly recyclable steel that our economy needs. They stated these efforts have proven successful, as the American steel industry is the cleanest and most energy efficient steel industry in the world. They recognized in this regard, the US has the lowest carbon dioxide ($CO2$); thus, making steel in the US is good for American workers, is good for the American economy, and better for the global environment than having steel made by America’s biggest global competitors.

Response 1:

As part of the EPA’s analysis of the economic impacts of the rule, compliance costs were compared to costs for each domestic producer of iron and steel. The results and summary of that comparison are included in the regulatory impact analysis of the rule. With annual compliance cost estimates ranging from 0.017% (U.S. Steel) to 0.022% (Cleveland Cliffs) of annual revenue, the rule is not expected to result in significant changes to the trade composition of the market.

Comment 2:

[1720] Commenters stated manufacturers are committed to environmental stewardship, as well as to creating jobs, expanding opportunity, and improving the quality of life for everyone. They declared the US steel industry is amongst the cleanest in the world. They stated onerous regulations make US manufacturers less competitive globally and could lead to a serious weakening in our domestic supply chain for clean-manufactured material and instead will lead to production outside of the US, where environmental protections are often less stringent. They stated the EPA should instead issue regulations that bolster domestic II&S manufacturers that are providing cleaner, reliable supply chain inputs in both domestic and international markets.

Response 2:

EPA acknowledges the general concerns regarding global competition. The proposed regulations are a result of the LEAN decision and CAA section 112(d)(2)/(d)(3).

Comment 3:

[1595] Commenters acknowledged steel has long formed the backbone of our manufacturing economy and is an essential material for our infrastructure, clean energy, auto sector, and many other products. They stated the integrated domestic steel industry is strong, but also must compete on a global market with competitors who do not engage in fair trade or adhere to strong environmental standards.

Response 3:

EPA acknowledges the general concerns regarding global competition. The proposed regulations are a result of the LEAN decision and CAA section 112(d)(2)/(d)(3).

Comment 4:

[1563; 1582] Commenters stated they are writing to express major concerns about the newly proposed MACT rules and their potential consequences for American manufacturing, particularly in the steel industry. They stated the 2023 Proposal as currently outlined, seem unattainable and threaten to exacerbate the challenges already faced by the American Steel Industry in its struggle to compete internationally.

[1563] Commenters acknowledged the American Steel Industry has long been an essential pillar of our nation's economy, providing not only jobs for countless workers but also serving as a foundational element for various downstream industries. Commenters stated they find themselves facing a daunting uphill battle in the global marketplace. They indicated that international competition, coupled with economic uncertainties, has put immense pressure on domestic steel manufacturers to maintain their competitive edge while adhering to stringent environmental standards.

[1582] Commenters expressed that if these rules are implemented without taking into account the practical challenges faced by our Steel and Iron manufacturers, the consequences could be devastating. They stated these industries are already grappling with higher operational costs, fluctuating global demand, and intense competition from countries with less stringent regulatory environments. They communicated that the 2023 Proposal threatens to further erode the industry's ability to compete on a level playing field, which could lead to job losses, reduced investment, and potentially the closure of our domestic manufacturing facilities. They stated the 2023 Proposal estimates the cost of compliance for these facilities to be $4 million annually.

Response 4:

EPA acknowledges the general concerns regarding global competition. As explained in the proposed and final rule preambles, the proposed and final standards were developed pursuant to the requirements of the LEAN decision and CAA sections 112(d)(2)/(d)(3) and 112(d)(6). However, we made several revisions to the proposed standards to address concerns

about costs. For example, as described in the final rule preamble, EPA is not finalizing the proposed lower opacity limits (of 5 percent) for the BOPF Shop or the BF casthouse. The EPA intends to gather more data and conduct further analyses before any changes are made to those opacity limits. Meanwhile, the opacity limits for these two sources will remain at 20 percent. Furthermore, the EPA raised the opacity action level for Bell leaks to 20 percent (instead of 10 percent), as requested by industry commenters. In addition, as explained in the preamble we revised the opacity limit for slag processing (from 5 percent to 10 percent), revised some of the HAP emissions limits for BF casthouses, BF stoves, and BOPF shops, and made other adjustments (based on public comments) to ensure the costs will be reasonable. We are finalizing requirements that we conclude have reasonable costs that are financially achievable by facilities.

7.3.6 Creation or retention of jobs

Comment 1:

[1631] Commenters stated II&S production not only has a long history of supporting the economy but is also essential to the infrastructure and clean energy projects of the future. They opined the steel industry is, in many ways, the backbone of American manufacturing. Commenters stated since the advent of the Industrial Revolution in the US, steel production has been a critical element propelling the nation forward to the top echelon of global military and trading powers alike. They revealed that the American steel industry today employs more than 370,000 people in the US and indirectly supports nearly two million American jobs, while providing nearly $520 billion in economic output, and generating $56 billion in federal, state, and local taxes.

Response 1:

As noted in the EPA responses in section 7.3.1, the EPA attempts to understand the full impact of proposed rules on the regulated market as well as domestic environmental quality. When analyzing the impact of proposed actions on the composition of the regulated market and the market shares of regulated facilities, the EPA commonly uses a cost-to-sales ratio to assess the reaction of those facilities and their parent companies. While this is an imperfect measure, it is useful in markets where detailed facility-level information is unavailable. For this proposed action, the annual compliance costs are estimated to be 0.017% to 0.022% of annual revenue for the affected parent companies. These small costs suggest that the impact on the prices and market shares in the domestic market should be small, and the EPA expects that the rule will not cause stability concerns for domestic manufacturing. The anticipated stability of the domestic market and market shares suggests that no significant environmental stewardship, job, or quality of life concerns are present.

Comment 2:

[1563; 1582] Commenters stated they are writing to express concerns regarding the 2023 Proposal and their potential consequences for American manufacturing, particularly in the steel industry. They maintained that these rules, as currently outlined, seem unattainable and threaten to exacerbate job retention as well as the industry's challenges to compete internationally. They stated if these rules are implemented without taking into account the practical challenges faced

by our Steel and Iron manufacturers, the consequences could be devastating. Commenters expressed that these industries are already grappling with higher operational costs, fluctuating global demand, and intense competition from countries with less stringent regulatory environments. They stated the 2023 Proposal threatens to further erode our industry's ability to compete on a level playing field, which could lead to job losses, reduced investment, and potentially the closure of our domestic manufacturing facilities. They said in fact, the 2023 Proposal estimates the annual cost of compliance for these facilities to be $4 million annually.

Response 2:

See response to Comment 1 above.

7.3.7 Cumulative regulatory burden on facilities

Comment 1:

[1631] Commenters restated the CAA Section 101(b)(1) provides two goals for implementation of the Act – to preserve and enhance the nation's air quality resources and to promote the productive capacity of the population.

Commenters stated the root of the problem is the EPA's commitment to the Agency's view that, except in those circumstances where the EPA would establish a BTF standard, they are precluded from considering costs when establishing a standard based on the floor for existing sources and that the Agency is authorized by the CAA to establish an existing source MACT standard without ever considering costs. They explained the EPA's commitment is misplaced, insofar as it rests on a misreading and misunderstanding of the relevant statutory provisions which in turn, raises significant concerns, given that, as is explained elsewhere in these comments, if the EPA finalizes this 2023 Proposal in anything close to its current form, facilities would incur significant costs and experience considerable disruption in their operations, even as no meaningful reduction in risk to public health would result.

Response 1:

EPA acknowledges that statute does indeed provide that EPA should work toward "promot[ing] the productive capacity of the population." However, this lone reference in section 101(b)(1) should not be considered to have any superseding or otherwise binding impact on the section 112 hazardous air pollution program. EPA agrees that the underlying principles and purposes of the statute must guide the agency when establishing regulations. However, the commenter seems to suggest that its interpretation, which constrains the agency's ability to promulgate regulations that ensure emissions reductions called for by the statute, is somehow mandated by a lone phrase in a separate statutory chapter. The EPA disagrees.

As explained earlier in the RTC (*See* RTC Section 1.1), EPA cannot take costs into account in determining the MACT floor.

Comment 2:

[1631] Commenters stated the 2023 Proposal and other ongoing rulemakings aimed at the country's steel industry would impose tremendous burdens. Commenters noted in the Agency's

earlier 2020 Final Action for the II&S source category, the EPA found that risk was well below the acceptable risk threshold set by Congress and that public health is protected with an ample margin of safety. Commenters stated as demonstrated elsewhere in the comments, the EPA has produced nothing in connection with this current action to dispute that finding. They stated accordingly, it is against this acceptable risk finding that the further actions the EPA is now contemplating must be considered, especially given the recent prior risk findings, it is important for the EPA to ensure that the Agency is not overburdening our domestic facilities with regulation in light of the significant competition steelmakers face from foreign markets, many of which are not subject to the stringent requirements that apply to our facilities. Commenters expressed the strong international competition the industry encounters makes them vulnerable to even small increases in operating costs, which is why it is so important that federal agencies, like the EPA, carefully consider the impacts that new regulations will have on operating margins. Commenters stated while we respectfully submit that many of the proposed revisions are technically and legally flawed, we also note that even if they were justified and appropriate, the time frames for compliance fail to take these concerns of disrupting the domestic steelmaking industry into account, with the vast majority of requirements requiring compliance just months from issuance. They stated if the EPA issues a final rule in March 2024 (consistent with the recent submittal to the court), these requirements would apply in less than a year from now.

[1631] Commenters declared all of this comes at a time when the EPA is proposing additional rules to impose new, cost-prohibitive and unprecedented requirements on other elements of the industry, specifically Taconite Iron Ore Processing and Coke Oven Batteries. They stated the coincidence of these regulations cannot be evaluated in isolation, as the EPA has done. Commenters said while it would be incumbent on the government to consider these issues across agencies—it is unfathomable that rules being issued by the same EPA sub-office (Office of Air Quality Planning and Standards within the Office of Air and Radiation) are operating and evaluating impacts in a siloed fashion.

Response 2:

The EPA acknowledges that there is a cumulative regulatory burden on II&S facilities from other rules. However, the court in *National Lime Ass'n v. EPA*, 233 F.3d 625, 633-34 (D.C.Cir. 2000), found that section 112(d)(1) requires EPA to set emissions standards for all listed HAP emitted from each listed major source category or subcategory). The court in *Sierra Club v. EPA*, 479 F.3d 875, 878 (D.C. Cir. 2007) confirmed the prior holding in *Nat'l Lime Ass'n* that section 112(d)(1) requires EPA to set emissions standards for all listed HAP emitted from each listed major source category or subcategory). Additionally, *LEAN* requires EPA to ensure that missing emission standards are promulgated, when EPA undertakes a 112(d)(6) technology review. As such, EPA *must* set a MACT standard for previously unregulated pollutants, under *LEAN*, *even if* there is a prior risk assessment that identifies the risk from those pollutants as "low."(*See LEAN*, 955 F.3d 1088 at 1091 "[w]e hold that … EPA's section 112(d)(6) review of a source category's emission standard must address all listed air toxics the source category emits."). This requirement, that EPA address all enumerated air toxic pollutants, is applicable to EPA regardless of any findings that EPA has made regarding the risk posed by the expected emission levels from those currently unregulated pollutants, or other cited considerations from commenters.

The CAA does not authorize EPA to decline to set the emission limits required by 112(d) because a risk assessment under 112(f)(2) finds that the existing standards provide an ample margin of safety. It is clear that Congress intended EPA to set technology-based standards that address all emitted HAP, and EPA does not agree that our failure to do so at the time of first issuing a NESHAP would justify a decision at this point not to address all emitted HAP from a major source.

Nevertheless, EPA has some discretion as to exactly how to set standards in order to fulfill the statutory obligations and court decisions. Therefore, after considering the public comments, the EPA made several revisions to the proposed standards to address concerns about costs. For example, as described in the final rule preamble, EPA is not finalizing the proposed lower opacity limits (of 5 percent) for the BOPF Shop or the BF casthouse. The EPA intends to gather more data and conduct further analyses before any changes are made to those opacity limits. Meanwhile, the opacity limits for these two sources will remain at 20 percent. Furthermore, the EPA raised the opacity action level for Bell leaks to 20 percent (instead of 10 percent), as requested by industry commenters. In addition, as explained in the preamble EPA revised the opacity limit for slag processing (from 5 percent to 10 percent), revised some of the HAP emissions limits for BF casthouses, BF stoves, and BOPF shops, and made other adjustments (based on public comments) to ensure the costs will be reasonable. We are finalizing requirements that we conclude have reasonable costs.

Comment 3:

[1563] Commenters stated it's abundantly clear that domestic steel manufacturers recognize the importance of environmental protection and sustainability. They stated unprecedented progress has been made in virtually every measurable category over the past decade. However, the proposed MACT rules appear to be tone-deaf to this progress and frankly disconnected from the practical realities of manufacturing.

[1595] Commenters stated the steel industry in the US is rapidly working to invest in facilities to ensure that they reduce greenhouse gas and other emissions at the urging of our union, the Biden Administration, and other key stakeholders. They stated facilities are investigating installing carbon capture technology, utilizing clean hydrogen, and other efficiency improvements. Commenters stated these facilities are also impacted by other rulemakings completed this year and in process by the EPA Office of Air and Radiation, including the 2023 proposed Taconite Risk and Technology Review, and the 2023 proposed Coke Ovens and Pushing, Quenching, and Battery Stacks Risk and Technology review. They stated as the EPA promulgates rules impacting this industry, the Agency must balance the need to ensure we have the cleanest steel industry in the world and that it continues to provide good jobs in the American economy.

Response 3:

EPA reiterates that it is under a legal obligation to implement regulations addressing previously unregulated emissions.

7.4 Benefits of proposed standards

Comment 1:

[1631] Commenters expressed that the thirty (30) proposed new HAP limits for new and existing point sources should not be finalized because:

- they either are not necessary to satisfy the LEAN decision or are not supported by the record or both, and
- the EPA has not provided a sufficient public comment period for the proposed standards.

[1631] Commenters stated the EPA proposes a series of new emission limits on BF stoves, BF casthouses, BOPF primary emission control systems, and sinter/recycling plants. They asserted the preamble states that the statutory basis for all of these limits is Section 112(d)(2)-(3), as gap-filling, with the exception of D/F and PAHs limits for sinter/recycling plants, which would be imposed under Section 112(d)(6). They indicated in total; the 2023 Proposal incorporates an additional 15 existing source emission standards and 15 new source emission standards.

[1631] Commenters stated to the extent the emission standards that the EPA is proposing for existing sources are derived from the calculated MACT floor, where, notwithstanding the plain language of CAA section 112(d)(2), the Agency has followed a longstanding practice of failing to take into consideration the cost of achieving the expected emission reduction, those standards are unlawful for the reasons given in other sections of these comments. They stated even assuming that the EPA was authorized to set emission standards under CAA Section 112(d)(2) based on the calculated MACT floor and without accounting for costs, the 2023 Proposal's standards are fatally flawed for additional reasons provided below:

They presented corrected data to the EPA, that the estimated risk for all of the point sources in this category combined was less than 1 in a million in 2018. The EPA has explained, for all of the 30 proposed limits, the agency expects no emissions reductions as a result of the emission limits; thus, the EPA intends to cap emissions at current low-risk levels with these 30 proposed limits. Commenters stated much of the EPA's speciated numerical proposals are unnecessary as capping current emissions can be achieved if the EPA were to finalize only a select few of the 2023 Proposal's new limits:

- THC for BF casthouses;
- THC for BF stoves;
- HCl for BOPF primary control devices; and
- HF and Hg for sinter/recycling plants.

[1631] Commenters estimated the above limits alone would cover at least 96 percent Hg, HCl, HF THC, HCl and D/F emissions based on the EPA's conservative presumptions. In addition, the EPA's 2023 Proposal for establishment of point source limits would cover – and even some of these are not necessary for instance, pollution control techniques would provide more certain control given technological feasibility issues. The remainder of the EPA's 2023 Proposal limits are unnecessary due to those same technologically feasibility issues, because surrogates exist to maintain the EPA's intended cap on emissions, or because all other potential point source emissions of these HAPs make up extremely low emissions, if any.

Response 1:

With regard to the 30 proposed new HAP limits for new and existing point sources, these limits are for previously unregulated HAP. Pursuant to the LEAN decision, CAA section 112(d)(2)/(3)

and the Court's Order for the EPA to complete this final rule (that fulfills the CAA section 112(d)(6) mandate) by March 11, 2024, the EPA must establish standards for these HAP based on available data in this final rule.

We collected emissions test data through the section 114 requests, and through public comments. We used all valid available data to calculate representative MACT floor limits using the well established UPL methodology which accounts for variability in the data. So, we are finalizing these limits similar to those proposed with some adjustments based on incorporation of new data received since publication of the proposed rule.

As described in the preamble, after reviewing public comments and available control technologies, we are finalizing emissions limits that reflect the installation and operation of ACI controls, which are emissions limits of 1.1E-08 lbs/ton of sinter for D/F (TEQ), 1.8E-03 lbs/ton of sinter for PAHs, and 1.8E-05 lbs/ton for mercury for existing sinter plant windboxes. Regarding new sources, we are promulgating limits of 1.1E-08 lbs/ton of sinter for D/F (TEQ), 1.5E-03 lbs/ton of sinter for PAHs, and 1.2E-05 lbs/ton for mercury for new sinter plant windboxes. The application of this ACI will achieve significant reductions of mercury, D/F and PAH emissions, important reductions given that mercury and D/F are highly toxic, persistent bioaccumulative pollutants, and PAHs (some of which are known or probable carcinogens). We estimate these limits for the three separate HAP will achieve 8 grams per year reductions of D/F TEQ emissions, 5.4 tpy reduction in PAHs, and 47 pounds of mercury.

Comment 2:

[1562] Commenters appreciated the 2023 Proposal to the 2020 Final Action, addressing nonregulated HAP specifically, COS, CS_2, Hg, HCl, HF, and D/F as well as providing revised standards for a few currently regulated HAPs and adding fenceline monitoring requirements for the technology review. Commenters expressed they were disappointed that this 2023 Proposal does little to address the need for emissions reductions from this source category. They stated the proposed amendment is an opportunity to further reduce emissions from these sources and address the existing disproportionate impact on fenceline communities, as well as reducing the risk to public health from transported pollution.

Response 2:

After reviewing public comments and available control technologies, we are finalizing emissions limits that reflect the installation and operation of ACI controls, which are emissions limits of 1.1E-08 lbs/ton of sinter for D/F (TEQ), 1.8E-03 lbs/ton of sinter for PAHs, and 1.8E-05 lbs/ton for mercury for existing sinter plant windboxes. Regarding new sources, we are promulgating limits of 1.1E-08 lbs/ton of sinter for D/F (TEQ), 1.5E-03 lbs/ton of sinter for PAHs, and 1.2E-05 lbs/ton for mercury for new sinter plant windboxes. The application of this ACI will achieve significant reductions of mercury, D/F and PAH emissions, important reductions given that mercury and D/F are highly toxic, persistent bioaccumulative pollutants, and PAHs (some of which are known or probable carcinogens). We estimate these limits for the three separate HAP will achieve 8 grams per year reductions of D/F TEQ emissions, 5.4 tpy reduction in PAHs, and 47 pounds of mercury.

Comment 3:

[1631] Commenters stated the 2023 Proposal is based on flawed data that overestimates the risk reductions and benefits achieved with the proposed standards and fails to properly consider the EPA's finding that this source category poses very low risk under the current standards. Commenters stated the EPA has significantly overestimated the PM2.5 benefits by using incorrect PM2.5-to-PM ratios for most of the UFIP source categories. They stated when corrected, instead of the EPA's purported 563 tpy of PM2.5 reductions, only an estimated 99 tpy of PM2.5 would be expected to be reduced by the 2023 Proposal. They stated the EPA's focus on PM2.5 in this rulemaking is misguided, if not illegal given the statutory objective and express authority of Section 112 to control HAP emissions.

[1631] Commenters stated furthermore, it is important to note that the EPA's NAAQS for PM2.5 at 12 µg/m3 is one of the most stringent in the world when compared to national standards in China, India, and Europe. Commenters asserted the EPA's long-term trend ambient air data shows acceptable levels of PM2.5 around II&S facilities that have already been greatly reduced. They stated the PM2.5 ambient air data compiled by the EPA has documented that PM2.5 concentrations from monitors located near II&S facilities have been reduced 39 percent based on the most current 2020-2022 published air quality design values data in comparison to 2005-2007 levels (Air Trends). They claimed the most current PM2.5 concentrations are all less than the stringent NAAQS average of 10.5 µg/m3.

Response 3:

The EPA developed PM2.5/PM ratios for UFIP sources according to emissions test data collected from two steel mills,[10] as described in the 2019 memo titled *Cost Estimates and Other Impacts for the Integrated Iron and Steel Risk and Technology Review*, located in the docket. HAP emissions and reduction estimates were not affected by the PM2.5/PM ratios used for PM2.5 emissions estimates.

Comment 4:

[1631] Commenters stated the EPA significantly underestimates compliance and economic costs to industry and consumers and fails to compare those costs with the diminished incremental benefits of the 2023 Proposal's controls. Commenters provided a table showing comparisons of HAP reduced, overall annual costs and cost-effectiveness by UFIP category based on both the EPA's (2023 UFIP Memo) and (Industry's UFIP Memorandum) cost estimates. Commenters stated when compared to the relatively small number of tons reduced per industry estimates of 3.17 tpy the result is exceedingly high costs per ton estimates that underscore both the cost and ineffectiveness of the 2023 Proposal.

Response 4:

The EPA identified 5 UFIP sources as a previously unregulated source of HAP emissions. With regard to the 30 proposed new HAP limits for new and existing point sources, these limits are for previously unregulated HAP. Pursuant to the LEAN decision, CAA section 112(d)(2)/(3) and the

[10] Estimates of $PM_{2.5}$ emissions were developed from $PM/PM_{2.5}$ factors in EPA, 2006. *Evaluation of $PM_{2.5}$ Emissions and Controls at Two Michigan Steel Mills and a Coke Oven Battery*. Final Report. U.S. Environmental Protection Agency, Research Triangle Park, NC. Work Assignment 4-12 under EPA Contract No. 68-D-01-073 by RTI International, Research Triangle Park, NC. February 2006. Table 5-2.

Court's Order for EPA to complete this final rule (that fulfills the CAA section 112(d)(6) mandate) by March 11, 2024, EPA must establish standards for these unregulated sources and unregulated HAP based on available data in this final rule. The EPA is finalizing standards for the 5 previously unregulated UFIP sources, 24 new HAP limits for new and existing point sources, and 6 work practice and surrogate standards for new and existing point sources. With regard to costs, after considering the public comments, the EPA agrees that we probably underestimated the costs of the proposed standards. However, based on consideration of public comments, EPA made several revisions to the proposed standards to address concerns about costs. For example, as described in the final rule preamble, EPA is not finalizing the proposed lower opacity limits (of 5 percent) for the BOPF Shop or the BF casthouse. The EPA intends to gather more data and conduct further analyses before any changes are made to those opacity limits. Meanwhile, the opacity limits for these two sources will remain at 20 percent. Furthermore, the EPA raised the opacity action level for Bell leaks to 20 percent (instead of 10 percent), as requested by industry commenters. In addition, as explained in the preamble EPA revised the opacity limit for slag processing (from 5 percent to 10 percent), revised some of the HAP emissions limits for BF casthouses, BF stoves, and BOPF shops, and made other adjustments (based on public comments) to ensure the costs will be reasonable. We are finalizing requirements that we conclude have reasonable costs. After making these adjustments, we conclude that our cost estimates (described in the preamble and technical support documents) are good estimates of the actual costs of the final rule.

Comment 5:

[1631] Commenters stated the proposed opacity standards and WP standards to address fugitive emissions from five UFIP source types under Section 112(d)(2), (d)(3), and (h) are flawed and should not be finalized as proposed. They stated even assuming that the EPA was authorized to set emission standards under CAA Section 112(d)(2) based on the calculated MACT floor and without accounting for costs, or that the Agency was permitted under Section 112(h) to base WP standards on floors, those standards are fatally flawed for the additional reasons provided with these comments. While the comments address each category of UFIP sources individually, industry commenters are also concerned about the cumulative cost-effectiveness of the proposed requirements for these five UFIP categories. They stated based on the EPA's estimates, even if industry complied with all of the proposed standards for all five of these UFIP categories, the fugitive HAP emissions would be reduced by less than 40 tpy, from approximately 110 tpy to approximately 70 tpy.

Commenters stated the EPA estimates that the 2023 Proposal will cost $1.6 million per year for industry to comply and $40,835 per ton of HAP removed for industry to implement the proposed WP standards and meet the proposed opacity standards for the five UFIP source types not currently subject to regulation under the 2020 Final Action for Subpart FFFFF. They concluded that if the EPA were to use corrected emission factors, the cost-effectiveness rate to remove 2 tpy increases to almost $1 million per ton of HAP removed. Industry estimated significantly lower baseline emissions of only a single tpy and emission reductions of 0.4 tpy. Using industry's higher overall annual costs of $290 million per year drives the cost-effectiveness rate to $819 million per ton of HAP removed (Industry's UFIP Memorandum). Commenters asserted the EPA must take these costs into account when establishing these standards and recognize that these extremely high costs are not justified given the very low level

of HAP removal, especially considering the Agency's prior determination that health is already protected with an ample margin of safety.

Response 5:

The EPA has identified 5 UFIP sources as a previously unregulated source of HAP emissions. Pursuant to the LEAN decision, CAA section 112(d)(2)/(3) and the Court's Order for EPA to complete this final rule (that fulfills the CAA section 112(d)(6) mandate) by March 11, 2024, EPA must establish standards for these unregulated sources based on available data in this final rule. We conclude that the finalized opacity limits for these sources represent the MACT floor level of performance, which is the minimum stringency allowed by the CAA section 112(d).

Comment 6:

[1631] Commenters stated the 2023 Proposal's 5% opacity limit for BF and BOPF slag handling, processing, and storage operations should be revised. They stated the 2023 Proposal underestimates the cost-effectiveness rate associated with the proposed standards. Based on the EPA's cost and emission estimates, the cost-effectiveness rate to meet a 5 to 9% opacity standard is $41,874 per ton of HAPs removed, based on overall annual costs of $307,818 and a reduction of 7 tpy. The 2023 Proposal overestimates the amount of HAP reduction and underestimates the costs, making the cost-effectiveness rate inaccurate.

Commenters asserted the EPA's overall analysis suffers from three major areas of potential uncertainty that, when compounded, would render EPA's estimates unreliable for making a final determination.

- First, there is no way to quantify with high confidence rates "unmeasurable" or "intermittent" pollutants from the five different slag handling, processing, and storage operations.
- Second, there is no way to quantify with high confidence the expected PM or HAP reduction rates based on the proposed 5 to 9% opacity standard.
- Third, EPA failed to consider site-specific costs for each slag operation that would be necessary for accuracy.

Commenters stated in short, compounding errors of this sort offer very low or no confidence in the EPA's emissions estimate before the MACT and after implementation of the MACT, or costs to comply with the 2023 Proposal. They asserted the only reasonable way to improve confidence in these analyses would be to complete facility-specific cost estimates and more rigorous studies on the effects of actions that could be taken to reduce HAP emissions from slag handling operations, and to improve data collection studies on unmeasurable pollutants.

They stated if the EPA's emission rates are corrected, at a minimum, then less than 1 tpy would be removed based on the EPA's expected reduction rate. At this low rate of reduction, the cost-effectiveness rate becomes $338,981 per ton of HAPs removed. The EPA's assumed capital costs for slag operations to meet a 5 to 9% opacity standard are significantly underestimated. Commenters noted $0.5 million vs. $177 million. They asserted if industry's estimated costs are taken into account and assuming 7 tpy of emission reductions, the cost-effectiveness rate is $2.5 million per ton of HAP removed. They also stated if industry's emission factors are used with the EPA's assumed rate of reduction, only 200 lbs/yr would be removed. Commenters maintained

the resulting cost-effectiveness rate is $182 million per ton of HAPs removed—clearly unreasonable and unjustified. They stated until the EPA undertakes a more robust analysis of the expected emission reductions and costs, the Agency should not move forward with the proposed opacity limit.

Response 6:

After considering comments, the EPA now recognizes some operations may need to make more significant changes than we anticipated at proposal to meet the 5 percent opacity standard at all times for the BOPF shop. After revisiting the 2022 opacity data from the shops provided to the EPA as part of the CAA section 114 information requests, EPA has concluded that we do not have sufficient time to fully analyze the data submitted in order to set a revised opacity standard for the BOPF shops. This is described in more detail in Section III.B.2. in the preamble for this final rule.

Comment 7:

[1631] Commenters stated the proposed Section 112(d)(6)-based revisions to the existing emission standards for BOPF shop and BF casthouse fugitive emissions are not required by statute or by the LEAN decision, and are otherwise unwarranted, inappropriate, and flawed. They asserted the 2023 Proposal's opacity and WP requirements for BOPF shops are flawed and should not be finalized as proposed. The 2020 Final Action (current Subpart FFFFF) imposes a 20% (3-minute average) opacity limit for BOPF shop fugitives with opacity monitoring during performance testing twice per permit term (midterm and renewal) to demonstrate compliance, which the EPA established in 2003.

Commenters stated following receipt of industry data provided to the EPA in 2022 under CAA Section 114 requests, the EPA now proposes a more stringent 5% (3- minute average) opacity limit for BOPF shop fugitives, subject to monthly performance testing to demonstrate compliance. They stated this visible emissions testing, using EPA Method 9, would be required for all shop openings. In addition to the 75% reduction in the opacity limit and increase from twice per permit term (approximately once every 2.5 years) to monthly Method 9 testing (an increase from 2 to 60 over a period of five years), the EPA proposes a number of WP standards for BOPF shops, including the following:

- Develop and operate according to a BOPF Shop Operating Plan to minimize fugitive emissions and detect openings and leaks, which is subject to EPA approval.
- List all events that generate visible emissions and all steps the company will take to reduce visible emissions.
- Identify specific actions that operators will take to prevent slopping at the vessel mouth.
- Minimize hot iron pour/charge rate (minutes) and set a maximum pour rate in tons/second.
- Schedule regular inspections of BOPF shop structure for openings and leaks to the atmosphere.
- Optimize positioning of hot metal ladles with respect to hood face and furnace mouth.
- Optimize furnace tilt angle during charging and set a maximum tilt angle during charging.

- Keep all openings, except roof monitors, closed, especially during transfer, to extent feasible and safe. All openings shall be closed unless the opening was in the original design of the BOPF shop.
- Use higher draft velocities to capture more fugitives at a given distance from hood, if possible.

In addition to these WP standards identified and specifically listed in the proposed regulatory text, the EPA's 2023 UFIP Memo includes a number of suggestions for other practices that II&S facilities could undertake to help minimize opacity and fugitive HAP emissions from BOPF shops, including:

- Prohibit burning material, such as bags, pallets and other material in the shop.
- Perform a ventilation study to maximize secondary (fugitive) emissions capture by hooding.
- Continuously monitor opacity from all openings with EPA Method Alt-082 (camera).
- Install additional equipment to minimize fugitive emissions, such as the following:
  - Add extension (flanges) from primary hood into charging and tapping aisles for better draft and to shorten distance to emission source.
  - Add extension of pouring spout on hot metal charging ladle to move emission point closer to or under hood.
  - Add small openings in furnace doors to allow monitoring of temperature and other parameters to avoid opening doors.
  - Add wall partitions or ducts to direct air into local hoods to prevent escape from building.
  - Add canopy hoods to enhance fugitive collection for local hoods.

Commenters stated despite listing these additional measures, and while certainly some of these activities would need to be undertaken to help ensure compliance with a 5% opacity limit, they are not clear what measures the EPA took into account when developing the Agency's estimates of compliance costs.

[1631] Commenters stated the EPA has attempted to account for various UFIP work practices through a granular exercise in reliance on the Agency's engineering judgement without technical support or analysis. Nevertheless, the EPA's record does not demonstrate or even attempt to support the Agency's assumption that, when all the proposed WP are implemented, BOPF shops would be able to comply on a continuous basis with a very stringent 5% opacity standard under all conditions.

[1631] Commenters stated, as the EPA noted during the 2003 initial MACT rulemaking, the activities within and emissions from BOPF shops are subject to immense numbers of variables and intermittent operations, including weather conditions, seasonal effects, use of multiple types of materials, and processing varying grades of steel. To effectively meet the 5% opacity limit, the control scheme needs to essentially be designed to have no visible emissions at any time to assure compliance with such a stringent opacity limitation.

[1631] Commenters stated even though WP will have some appreciable effect to reduce PM and HAP metal emissions, there is no direct tie between the WP identified and an expected level of

emission reductions. Nor is there any direct tie between those WP or any level of emission reductions and the ability for BOPF shops to meet a 5% opacity standard. They stated the EPA has not made any demonstration, and certainly not a demonstration with an appropriate level of certainty, to provide the necessary assurances that, even if industry were to apply all of the EPA's proposed WP, the BOPF shops will achieve a 5% opacity standard.

Response 7:

After considering comments, the EPA now recognizes some operations may need to make more significant changes than we anticipated at proposal to meet the 5 percent opacity standard at all times for the BF casthouse. After revisiting the 2022 opacity data from the casthouses provided to the EPA as part of the CAA section 114 information requests, EPA has concluded that we do not have sufficient time to fully analyze the data submitted in order to set a revised opacity standard for the BF casthouses. This is described in more detail in Section III.B.2. in the preamble for this final rule.

Comment 8:

[1631] Commenters stated the 2023 Proposal of the current 20% opacity limit to a 5% opacity limit for BF casthouse fugitives is flawed and should not be finalized as proposed. They maintained the EPA has not demonstrated that the proposed 5% opacity standard (6- minute average) for BF casthouse fugitives would be achievable in practice or cost-effective.

They asserted the EPA claims that industry will be able to make changes to the BF casthouses to ensure that opacity will not exceed 5% under all conditions, and that industry could do so cost-effectively. They stated the EPA claims to be establishing opacity limits that can easily be met for relatively reasonable, modest capital and annual expenses. The reality, however, is far different from what the EPA claims. Commenters asserted the EPA has failed to demonstrate that the Agency's estimates are accurate, and industry has undertaken their own studies and analyses that prove the EPA's estimates are in fact woefully inaccurate and significantly underestimate the costs involved. They stated these costs would impose an economic burden on the industry that has not been justified, especially when coupled with the EPA's overstated emission reductions. They maintained while EPA's estimated cost-effectiveness rate may appear reasonable, industry's cost estimates that are building-specific and based on industry knowledge must be taken into account. They stated industry's estimates demonstrate that the 2023 Proposal is unreasonably expensive and not necessary. They stated the UPL analysis supporting a 20% opacity limit and the astoundingly high rates of $3 million (based on the EPA emission estimates) to $234 million per ton of HAP reduced (based on industry emission estimates) for the BF casthouses to comply with the proposed 5% opacity limit should definitively establish that the EPA's proposal is not cost effective and cannot move forward. Commenters stated the EPA has previously found cost-effectiveness rates in this range to be too expensive and unreasonable in RTR rulemakings (NSPS Review for Lead Acid Battery Manufacturing Plants and NESHAP for Lead Acid Battery Manufacturing Area Sources Technology Review) under Section 112(d)(6), which supports industry's position that the EPA should not move forward with the 2023 Proposal.

Commenters stated particularly when the foregoing is coupled with the EPA's prior determination that this source category at the current level of emissions has low risk with an adequate margin of safety, the EPA has no defensible reason to exercise discretion otherwise.

Response 8:

After considering comments, the EPA now recognizes some operations may need to make more significant changes than we anticipated at proposal to meet the 5 percent opacity standard at all times for the BF casthouse and BOPF shop. After revisiting the 2022 opacity data provided to the EPA as part of the CAA section114 information requests, EPA has concluded that we do not have sufficient time to fully analyze the data submitted in order to set a revised opacity standard for the BF casthouses and the BOPF shops. This is described in more detail in Section III.B.2. in the preamble for this final rule.

Additionally, we are still requiring BOPF shops to implement work practices, as described in Section III.B.2. in the preamble. We expect the capital and annual costs to comply with these revised work practice standards will be quite reasonable. The available data and estimated costs are described in the Federal Register Notice (i.e., preamble) for this final rule and in the technical memo titled: Unmeasured Fugitive and Intermittent Particulate Emissions and Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF (UFIP Memo), which is available in the docket for this final rule.

Comment 9:

[1631] Commenters stated the proposed Section 112(d)(6)-based revisions to the existing emission standards for BOPF shop and BF casthouse fugitive emissions are not required by statute or by the LEAN decision, and are otherwise unwarranted, inappropriate, and flawed. They stated the record for this 2023 Proposal does not demonstrate that the EPA has resolved those uncertainties or identified a development in control technologies, processes, or practices for BOPF shop or BF casthouse fugitives.

Commenters opined that the 2023 Proposal creates the impression that specific WP will achieve specific HAP reductions, and that industry could otherwise take additional measures to reduce opacity down to less than 5% opacity (3-minute average for BOPF shops and 6-minute average for BF casthouses). They referenced the EPA's 2023 UFIP Memo which provides the HAP emission reduction rates of 20% for BOPF shop fugitives and 32% for BF casthouse fugitives that the EPA presumes would be achieved if the BOPF shops and BF casthouses meet the proposed lower opacity limits and new WP standards. They stated these presumed reduction rates are based on the EPA's own engineering judgment without the benefit of any technical support or justification.

[1631] Commenters stated the record for this 2023 Proposal has identified no data or information to substantiate such a claim regarding the effectiveness of certain WP or what could be done to maintain opacity at or below 5% on short, 3- and 6-minute averaging periods. They stated to be sure the EPA has identified WP that are already in place, and the Agency has cited limited visible emissions opacity data with low readings while ignoring numerous opacity readings in the record of 15% or greater. Commenters stated these WP were in place during the 2020 Final Action rulemaking, and nothing has changed since then. They stated the BOPF shops and BF

casthouses remain the same, and their opacity readings are in the same range as they were during the 2020 Final Action. They stated the EPA simply has identified no developments.

Response 9:

After considering comments, the EPA now recognizes some operations may need to make more significant changes than we anticipated at proposal to meet the 5 percent opacity standard at all times for the BF casthouse and BOPF shop. After revisiting the 2022 opacity data provided to the EPA as part of the CAA section 114 information requests, EPA has concluded that we do not have sufficient time to fully analyze the data submitted in order to set a revised opacity standard for the BF casthouses and the BOPF shops. This is described in more detail in Section III.B.2. in the preamble for this final rule.

Additionally, we are still requiring BOPF shops to implement work practices, as described in Section III.B.2. in the preamble. We expect the capital and annual costs to comply with these revised work practice standards will be quite reasonable. The available data and estimated costs are described in the Federal Register Notice (i.e., preamble) for this final rule and in the technical memo titled: Unmeasured Fugitive and Intermittent Particulate Emissions and Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF (UFIP Memo), which is available in the docket for this final rule.

Comment 10:

[1631] Commenters stated the 2023 Proposal's revision of the current 20% opacity limit to a 5% opacity limit for BF casthouse fugitives is flawed and should not be finalized as proposed. They stated the 2023 Proposal overestimates baseline emissions from BF casthouses and the emission reductions that would be expected from compliance with a 5% opacity standard.

They stated the EPA estimates fugitive HAP emissions from BF casthouses to be 46 tpy. The EPA also estimates that fugitive HAP emissions would be reduced to 14 tpy if the BF casthouses complied with a significantly lower opacity limit of 5%. They asserted if the EPA's emission estimates are corrected, then the current level of HAP fugitive emissions from BF casthouses would be only 15 tpy, and, assuming the same rate of reduction, the total amount of HAPs that would be reduced if all BF casthouses were meeting the 5% opacity limit, the reduction would be a modest 5 tpy.

[1631] Commenters stated because of the uncertainties described in these comments and detailed in industry's UFIP Memorandum, the EPA has overestimated HAP emissions and consequently overestimated HAP reductions. They expressed while there is no way to quantify with high or even reasonable confidence the emission rates of unmeasurable and intermittent fugitive HAPs emitted from BF casthouses or that would be reduced through compliance with a 5% opacity limit, by using more accurate data and relying on more than 100 years of experience with BF casthouses, industry and their engineering consultants estimate a current level of fugitive HAP emission for all eight facilities' BF casthouses combined of only 0.6 tpy—a small fraction of the EPA's estimated 46 tpy. They asserted that assuming the EPA's estimated rate of reduction, the total amount of HAP emissions that would be reduced is only 0.2 tpy (or 400 lbs/yr) that would then be distributed among the eight facilities' or 14 plus different BF casthouses—truly de

minimis. They stated because of the minimal amount of fugitive emissions potentially escaping from BF casthouses, even somehow completely eliminating these HAP emissions would not yield any meaningful difference in emissions, certainly not the emission reductions the 2023 Proposal predicts.

Response 10:

After considering comments, the EPA now recognizes some operations may need to make more significant changes than we anticipated at proposal to meet the 5 percent opacity standard at all times for the BF casthouse and BOPF shop. After revisiting the 2022 opacity data provided to the EPA as part of the CAA section114 information requests, EPA has concluded that we do not have sufficient time to fully analyze the data submitted in order to set a revised opacity standard for the BF casthouses and the BOPF shops. This is described in more detail in Section III.B.2. in the preamble for this final rule.

Additionally, we are still requiring BOPF shops to implement work practices, as described in Section III.B.2. in the preamble. We expect the capital and annual costs to comply with these revised work practice standards will be quite reasonable. The available data and estimated costs are described in the Federal Register Notice (i.e., preamble) for this final rule and in the technical memo titled: Unmeasured Fugitive and Intermittent Particulate Emissions and Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF (UFIP Memo), which is available in the docket for this final rule.

Comment 11:

[1631] Commenters stated the 2023 Proposal's estimated emission reductions from BOPF shops complying with a 5% opacity limit and new WP standards are inaccurate. They stated the EPA estimates emissions from the BOPF shops and resulting emission reductions associated with compliance with the proposed opacity and work practice standards based on what commenters terms the Agency's own engineering judgment without technical support and some very aggressive assumptions. They stated the EPA estimates current fugitive HAP emissions of 123 tpy for all 11 BOPF shops and an average reduction of 20% industrywide, which equates to 25 tpy, based on compliance with the WP standards and 5% opacity (3-minute average) limit. Commenters stated because of the uncertainties described throughout these comments and as detailed in industry's UFIP Memorandum, the EPA's estimated HAP emissions and estimated reductions in HAP emissions are overstated. They stated while there is no way to quantify with high or even reasonable confidence the emission rates of unmeasurable and intermittent HAPs emitted from BOPF shops or that would be reduced through undertaking certain WP, by using more accurate data and relying on nearly 60 years of experience with BOPF shops, industry and their engineering consultants estimate a current level of fugitive HAP emissions, from all 11 BOPF shops industry-wide, of 12.4 tpy compared the EPA's estimated 123 tpy.

[Commenters noted that Industry Commenters have not attempted to compare our estimates of UFIP emissions to site-specific actual emissions reports. The ability to make these comparisons on an equivalent basis is complex given that actual emissions reporting requirements vary by state and sometimes also by individual permit and are site-specific. Therefore, our analysis focused on the EPA's estimates and the approach identified in the Agency's 2023 UFIP Memo.]

[1631] Commenters stated assuming a 21% reduction, the total amount of HAP emissions that would be reduced from a 123-tpy-baseline is only 26 tpy distributed across the entirety of the 11 BOPF shops; therefore, based on industry's estimated baseline and the EPA's assumed level of control (which is not conceded), the reduction would be 2.6 tpy—just a fraction of the EPA's assumed reduction of 25 tpy. Because of the minimal amount of fugitive emissions generated from BOPF shop processes, even completely eliminating these HAP emissions would not yield the significant emissions reductions the 2023 Proposal predicts.

Response 11:

After considering comments, the EPA now recognizes some operations may need to make more significant changes than we anticipated at proposal to meet the 5 percent opacity standard at all times for the BF casthouse and BOPF shop. After revisiting the 2022 opacity data provided to the EPA as part of the CAA section114 information requests, EPA has concluded that we do not have sufficient time to fully analyze the data submitted in order to set a revised opacity standard for the BF casthouses and the BOPF shops. This is described in more detail in Section III.B.2. in the preamble for this final rule.

Comment 12:

[1631] Commenters stated the 2023 Proposal's BOPF shop WP standards are unnecessary, inappropriate, and overly prescriptive and would impose exorbitant costs to meet 100 percent of the time. They expressed that other WP = WP other than fully enclosing BOPF shop and increasing draft velocity. They stated the EPA proposes several WP standards that already occur voluntarily or pursuant to federal or state requirements, and any codification of those requirements would unilaterally and unnecessarily add a compliance burden across the entire industry as well as those that rely on steel and iron—without resulting in any reduction in emissions. Further, requiring prescriptive WP employed by one facility to be implemented across the industry fails to account for the site-specific considerations that impacted feasibility of the given practice in the first place. Commenters stated that if the EPA proceeds on the current record, the Agency would add a substantial administrative and cost burden for several facilities, without a corresponding emissions benefit. Commenters asserted such action would be contrary to CAA Section 101(b)(1) and arbitrary and capricious (i.e., a failure of reasoned decision-making).

Response 12:

The EPA acknowledges that many of the finalized work practice requirements are already in use at some facilities. However, BOPF shops fugitives were identified as a significant source of emissions, and the EPA examined work practices in use at the best performing facilities to identify which work practices would be effective in reducing BOPF shop fugitive emissions at all II&S facilities. The EPA believes that promulgating these work practice requirements is important to managing BOPF shop fugitive emissions. Additionally, the EPA is finalizing a requirement for a BOPF Shop Operating Plan alongside these work practice standards. The purpose of this Operating Plan is to address differences in BOPF shops across facilities by allowing owners and operators to customize an approach to meeting the required work practice standards for each individual BOPF shop.

Comment 13:

[1631] Commenters stated the 2023 Proposal's cost estimates fail to sufficiently and appropriately address the full extent of capital project and annual operating costs that industry would reasonably expect to incur to comply with the proposed new opacity standards. They stated overall, the EPA has overestimated emissions and underestimated costs to such a degree that from a dollar-per-ton cost-effectiveness standpoint for BOPF shops and BF casthouses, the cost-effectiveness is over two thousand times too optimistic.

Response 13:

After considering comments, the EPA now recognizes some operations may need to make more significant changes than we anticipated at proposal to meet the 5 percent opacity standard at all times for the BF casthouse and BOPF shop. After revisiting the 2022 opacity data provided to the EPA as part of the CAA section114 information requests, EPA has concluded that we do not have sufficient time to fully analyze the data submitted in order to set a revised opacity standard for the BF casthouses and the BOPF shops. This is described in more detail in Section III.B.2. in the preamble for this final rule.

Additionally, we are still requiring BOPF shops to implement work practices, as described in Section III.B.2. in the preamble. We expect the capital and annual costs to comply with these revised work practice standards will be quite reasonable. The available data and estimated costs are described in the Federal Register Notice (i.e., preamble) for this final rule and in the technical memo titled: Unmeasured Fugitive and Intermittent Particulate Emissions and Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF (UFIP Memo), which is available in the docket for this final rule.

Comment 14:

[1631] Commenters stated while the EPA estimates a cost-effectiveness rate of $30,693 per ton of fugitive HAPs removed from BOPF shops and BF casthouses collectively, if industry's estimated costs are applied to the EPA's emission estimates, the cost soars to $6.2 million per ton of HAPs removed. They stated if industry's estimated costs are applied to corrected emission rates, the cost-effectiveness rate more than doubles to $15.5 million per ton of HAPs removed.

They expressed that if industry emission estimates are used with industry cost estimates, which industry commenters maintain is the most accurate estimation for purposes of determining an appropriate cost-effectiveness rate, the rate is a staggering $88 million per ton of HAPs removed. They stated while the 2023 Proposal paints a rosy picture of what it would cost to reduce metal HAP emissions to a level that is sufficient to meet a 5% opacity standard at all openings at all times and under all conditions, the economic reality is much different as reflected in these numbers of $6.2 to $88 million per ton. They stated that industry's analysis demonstrates the proposed 5% opacity and WP standards are not reasonable and should not be finalized.

Response 14:

After considering comments, the EPA now recognizes some operations may need to make more significant changes than we anticipated at proposal to meet the 5 percent opacity standard at all times for the BF casthouse and BOPF shop. After revisiting the 2022 opacity data provided to

the EPA as part of the CAA section114 information requests, EPA has concluded that we do not have sufficient time to fully analyze the data submitted in order to set a revised opacity standard for the BF casthouses and the BOPF shops. This is described in more detail in Section III.B.2. in the preamble for this final rule.

Additionally, we are still requiring BOPF shops to implement work practices, as described in Section III.B.2. in the preamble. We expect the capital and annual costs to comply with these revised work practice standards will be quite reasonable. The available data and estimated costs are described in the Federal Register Notice (i.e., preamble) for this final rule and in the technical memo titled: Unmeasured Fugitive and Intermittent Particulate Emissions and Cost Impacts for Integrated Iron and Steel Facilities under 40 CFR Part 63, Subpart FFFFF (UFIP Memo), which is available in the docket for this final rule.

8. Statutory and Executive Order Reviews

8.1 Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

Comment 1:

[1598] Commenters stated lead is persistent, it does not break down or degrade. The EPA needs to effectively protect fenceline communities from toxins like lead that are known to have a significant impact on children's health, with no safe level of lead exposure identified by federal agencies.

Response 1:

As mentioned in Section III.C.2 of the preamble, at the fenceline, based on fenceline monitoring conducted in 2022-23 at Integrated Iron and Steel facilities in response to the section 114 request, the highest monitored lead levels were found to be 5 times lower than the current air quality health NAAQS value. While this does not indicate no health risk at the fenceline, this value is the level EPA set in 2008 to establish an "adequate margin of safety to protect public health.". EPA did not propose nor are we prepared to promulgate a requirement to monitor any metals other than chromium as part of the fenceline requirement, but we intend to gather more fenceline monitoring data for lead in 2024 at Integrated Iron and Steel facilities to better characterize fugitive lead emissions. Additionally, we intend to gather more data regarding HAP metals from sinter plant stacks through the use of PM continuous monitoring systems (PM CEMs). We intend to collect this data in a separate action under CAA Section 114 that will follow this final rule.

8.2 Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations and Executive Order 14096: Revitalizing Our Nation's Commitment to Environmental Justice for All

Comment 1:

[1598] Commenters stated the EPA should take seriously the Agency's commitment to environmental justice and revisit whether this proposed rule addresses the disproportionate impact steel plants are having on lower income and communities of color. Commenters stated they hope the EPA will consider these comments and revise this rule to make it a truly effective tool for communities that have long suffered at the hands of companies that care little for their health and well being.

[1683] Commenters emphasized the EPA should go further to strengthen the National Emission Standards for Hazardous Air Pollutants for integrated iron and steel manufacturing facilities to address ongoing, severe health impacts on residents of the Monongahela Valley in Southwestern Pennsylvania, the site of the U.S. Steel's integrated Mon Valley Works.
[1683] Commenters stated SWPA (Southwestern Pennsylvania) clearly needs a more health protective standard for hazardous air pollutants from steelmaking facilities. The current situation in Allegheny County is untenable. The interconnected 3 U.S. Steel facilities in the Monongahela Valley, the Edgar Thomson Steel Plant, the Clairton Coke Works, and Irvin Works emit hazardous air pollutants, metals, benzene, and lead in addition to SO2, NOx, PM2.5 and H2S pollution that harm health. Allegheny County is in the top 1 percent of all counties for cancer risk from point source air toxics emissions (Cancer Risk in Allegheny County, Pa., May 2021). 90 percent of this risk attributable to these integrated steelmaking facilities.

[1683] Commenters stated people in the Mon Valley already have air that is worse than 93 percent of the entire country for fine particulate matter, and it is well known that particles are carriers for hazardous air pollutants that are delivered directly into the bloodstream of residents. In 2022, 179 out of 365 days were considered not good air quality days. In 2021, 200 out of 365 days were considered not good air quality days.

[1683] Commenters stated Allegheny County, particularly in the Mon Valley, experiences a substantial number of days with temperature inversions, and these inversions have large impacts on regional air quality. Commenters stated they know these events frequently occur in the overnight or early morning hours when atmospheric conditions and low wind velocity conditions trap pollution emitted overnight by industrial operators in river valley communities. Short-term spikes in pollution impact the health of residents who are exposed to high levels of pollution for hours at a time.

[1683] Commenters stated The Create Lab at Carnegie Mellon University has created a crowdsourced app that documented over 70,000 air quality complaints over 4 years. These complaints are based on people smelling bad air, which has been shown to have a strong correlation with sulfur and VOC emissions. The visualization of these reports, in another app, "Plume Pgh," shows how weather inversions trap these pollutants in the Mon Valley, resulting in these smell reports that occur in the waking hours, when people get up and enter the dome of pollution in the mornings. Additionally, other evidence of the impact of these inversions can be seen on cameras that are pointed at polluting facilities in the Mon Valley, such as at the Clairton Coke Works and the Edgar Thomson Works.

[1683] Commenters stated communities where the Mon Valley Works facilities are located are environmental justice communities. Approximately 21,000 people live in Braddock and North

Braddock within a 2-mile radius of the Edgar Thomson blast furnaces and rolling mills. Approximately 130,000 people live within a 5-mile radius of the Clairton Coke Works property. 1/3 of the people have low income. 36 percent are minority population, primarily African American, and 1/5 are older than 64 (EPA EJ Mapper Tool). Commenters stated in 2022, these residents experienced air quality ranked in the top-10 worst airsheds in the US 40 percent of all days for at least a portion of the day based on the EPA's Air Quality Index hourly values. These areas ranked as [~~2~~] the #1 worst airshed about 10 percent of all days (with exceedances of the PM 2.5 daily particle standards multiple times). The Mon Valley plants cannot continue to limp along at the expense of the health of people. Many residents know too well the toll that high levels of toxics emissions take on their lungs, heart, and family members.

[1592] Commenters stated agencies shall, among other acts, assess and address disproportionate and adverse human health and environmental effects (including risks) and hazards of Federal activities. (E.O. 14096, section 3(a)(i)) Moreover, agencies shall "evaluate relevant legal authorities and, where available and appropriate, consider adopting or requiring measures to avoid, minimize, or mitigate disproportionate and adverse human health and environmental effects (including risks) and hazards of Federal activities on communities with environmental justice concerns, to the maximum extent practicable, and to address any contribution of such Federal activities to adverse effects—including cumulative impacts of environmental and other burdens—already experienced by such communities." (*Id.*, section 3(a)(vi))

[1592] Commenters stated Middletown is a very vulnerable population that needs more protection than afforded under the proposed rule. The EPA should require enhanced monitoring and impose additional action levels, as described above, to reduce the pollution burden on this already overburdened community. Failing to provide vulnerable communities greater protections violates the President's mandate to "identify, analyze, and address disproportionate and adverse human health and environmental effects (including risks) and hazards" and "to avoid, minimize, or mitigate disproportionate and adverse human health and environmental effects (including risks) and hazards" on environmental justice communities. (E.O. No. 14096, sections 3(a)(i), (vi))

Response 1:

The EPA strives, to the greatest extent practicable and permitted by law, to make environmental justice part of its mission by identifying and addressing, as appropriate, disproportionate and adverse human health or environmental effects of its programs, policies, and activities on communities with environmental justice concerns. The EPA's environmental justice policies promote justice, including access to health impact data, by providing information on the types of environmental justice harms and risks that are prevalent in communities with environmental justice concerns. These policies do not mandate consideration of any specific factors in or particular outcomes from an action. They provide that environmental justice analysis be performed, e.g., as part of regulatory impact analysis, as appropriate, so that the public can have

this information.[11] Considerations are made to protect public health for all people, regardless of racial or socioeconomic status, and the EPA does not believe it is necessary to establish a default factor to account for socioeconomic and other community-based stressors at this time. Anticipated positive health benefits resulting from the reduction in $PM_{2.5}$ include decreased premature mortality, reduced hospitalizations for respiratory and cardiovascular symptoms, lower incidence of lung cancer, fewer lost works days, and others.

Comment 2:

[1683] Commenters stated their region's 2.6 million people are at risk unless the air toxics NESHAP standards are revised to protect health. This includes vulnerable populations who bear disproportionate risks from current levels of air pollution: 55,269 children with pediatric asthma; 213,963 people with adult asthma; 160,478 people with COPD; 228,249 people with cardiovascular disease; 267,874 people living with low incomes; and 372,912 people of color. The environmental justice concerns are clear, substantial, and must play a prominent role in setting updated standards.

Response 2:

This comment is beyond the scope of this technology review rulemaking. In the overall 2020 RTR risk assessment and the 2020 RTR final rule preamble, the EPA determined that the source category risks were acceptable and that the NESHAP provided an ample margin of safety (AMOS). For this technology review, we did not perform any additional risk analysis.

Comment 3:

[1592] Commenters stated the EPA's failure to require HAPs emission reductions to the maximum extent achievable or "practicable" and to clean up the legacy pollution from integrated iron and steel manufacturing facilities will perpetuate the already disproportionate adverse impact HAPs pollution from these facilities has had on historically overburdened environmental justice communities. In the preamble to the proposed rule, the EPA states that the percentage African American population living within 5 km of the nine integrated iron and steel manufacturing facilities at issue in this rulemaking is more than twice the national average. And the percentage of the population living below the poverty level and below two times the poverty level is well above the national average. As an initial matter, pollution from integrated iron and steel manufacturing facilities impacts communities located further than 5 km from the facility. The EPA needs to revisit the actual impact of these facilities and reevaluate the demographics actually affected and evaluated for protective measures.

[1592] Commenters stated Middletown, Ohio is a community adversely impacted by the Middletown Works Integrated Iron and Steel manufacturing facility. Middletown is a highly

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[11] The assessment of costs and benefits described herein and in the RIA, including the environmental justice analysis, is presented for the purpose of providing the public with as full as possible an understanding of the potential impacts of this final action. The EPA notes that analysis of such impacts is distinct from the determinations finalized in this action under CAA section 112, which are based solely on the statutory factors the EPA is required to consider under that provision.

segregated community with areas that are 44 to 75 percent minority. Contrast that with the 2020 Census results for Butler County, where Middletown is located, that shows the County is 75.5 percent white and 8.7 percent African American. The areas of Middletown that are predominately minority, well over both the national and Butler County averages, have people with life expectancies of 66 to 76 with low incomes that range from $13,935 to $25,333. For the areas of Middletown that are predominately white, the percentage of low-income people ranges from 23 to 88 percent with incomes of $9,751 to $37,107. Federal poverty levels range from $14,580 to $24,860 for one to three person households.

[1592] Commenters stated Middletown residents are already overburdened with high levels of air pollution. NAAQS monitors in Middletown show frequent short-term (less than 24- hour) extremely elevated levels of PM10 and PM2.5. These elevated levels are repeatedly measured each year, going back decades. Ambient air monitoring in Middletown also shows that Middletown Works is one of the largest contributors of criteria pollutants in Butler County and that its pollution extends to adjacent Hamilton County. The EPA's EJ Screen tool shows that Middletown is in the top 5 to 10 percent for most elevated concentrations of PM2.5 in the United States. As PM is a carrier of HAPs, these elevated levels and frequent high spikes of pollution indicate higher exposures to HAPs and put the vulnerable Middletown community at elevated risk. Further, substantial information exists about the impact of metals, including lead, on human health. Among this information is a specific study of lead, zinc and tin in a park near the Middletown Works facility. (Dietrich, M., Huling, J., & Krekeler, M. P. (2018). Metal pollution investigation of Goldman Park, Middletown Ohio: Evidence for steel and coal pollution in a high child use setting. Science of The Total Environment, 618, 1350-1362. https://doi.org/10.1016/j.scitotenv.2017.09.246) Evidence for steel and coal pollution in a high child use setting showed high concentrations of lead, tin and zinc and showed a "high correlation of known constituents of steel suggests [Middletown Works] as the source." (Ibid)

[1592] Commenters stated the proposed rule does not protect fenceline communities. Commenters stated it is well documented in studies going back four decades that environmental justice communities disproportionately bear the brunt of toxic pollution. The Biden Administration has declared that environmental justice is a priority for the United States "[t]o fulfill our Nation's promises of justice, liberty, and equality, every person must have clean air to breathe; clean water to drink; safe and healthy foods to eat; and an environment that is healthy, sustainable, climate-resilient, and free from harmful pollution and chemical exposure." (E.O. 14096 of Apr 21, 2023, section 1 (88 FR 25251). The President has directed that "each agency should make achieving environmental justice part of its mission." (*Id*., section 3(a)) "[A]dvancing environmental justice can successfully occur only through meaningful engagement and collaboration with underserved and overburdened communities to address the adverse conditions they experience and ensure they do not face additional disproportionate burdens or underinvestment." (*Id*., section 1) Advancing environmental justice includes "preventing pollution" and "clean[ing] up legacy pollution that is harming human health and the environment." *Ibid*.

[1496] Commenters stated the Environmental Justice impacts of the rule must ensure that the rule addresses "existing disproportionate impacts on the minority and/or low-income populations". The community neighboring Middletown Works is a largely ignored

environmental justice community. The local air agency does not timely respond to pollution reports but instead waits a day or two, even when multiple reports are received. In doing so, the agency avoids timely documenting or investigating the worst pollution events such as odors or clouds and other conditions may have changed by time agency personnel responds.
Despite over 100 years of steel mill operation, the state air agency has been unable or unwilling to determine the causes of chronic nuisance complaints that show chronic harm to health and welfare and require a fix for those problems. Summarized information from the EPA's EJ Screen, shows the percentage of low-income Middletown residents is as high as 88 percent. The percentage of minorities is high as 75 percent. The percentage with less than a high school education as high as 35 percent. Life expectancy as low as 66 years.

Response 3:

For this rulemaking, we did not conduct any emissions or risk modeling to determine population exposures. Therefore, we conducted a proximity demographic analysis and not a risk-based demographic analysis. Although the proximity demographic analyses allow one to identify the potentially vulnerable populations residing near affected facilities, it does not capture variation in baseline exposure across communities, nor does it indicate that any exposures or impacts will occur and should not be interpreted as a direct measure of exposure or impact. These points limit the usefulness of proximity demographic analyses when attempting to predict potential reductions in disproportionate impacts to any part of the population or segments of exposed communities. Based on fenceline monitoring conducted in 2022-23 at Integrated Iron and Steel facilities in response to the section 114 request, the highest monitored lead levels were found to be 5 times lower than the current air quality health NAAQS value. While this does not indicate no health risk at the fenceline, this value is the level EPA set in 2008 to establish an "adequate margin of safety to protect public health.". With regard to the last statement from the commenter discussing the local air agency, this is out of scope for the current rulemaking.

Comment 4:

[1594] Commenters stated they strongly support the EPA establishing a fenceline monitoring standard for chromium. However, the EPA has arbitrarily and capriciously declined to establish a fenceline monitoring standard for lead. (*Transactive Corp*, 91 F.3d at 237 ("A long line of precedent has established that an agency action is arbitrary when the agency offered insufficient reasons for treating similar situations differently.")) The EPA states that lead emissions are below a level of concern because fenceline sampling results (developed for the ICR) were below the National Ambient Air Quality Standard ("NAAQS") for lead (0.15 μg/m3 based on a three-month rolling average). (88 FR 49402, 49414, July 31, 2023). However, this assessment does not align with the EPA's standard approach in other rules, nor does it account for the fact that communities surrounding II&S facilities are facing environmental justice issues and are disproportionately burdened with pollution, including exposure to lead. For example, in the 2015 Refinery Rule, the EPA set the action level based on the highest annual concentrations expected after full implementation of MACT. More recently in the NESHAP revisions for the HON, SOCMI, and P&R I and II categories as well as the currently proposed NESHAP revisions for coke ovens, the EPA set the action level in the same manner as the 2015 Refinery Rule. The EPA has not explained, other than with a *non sequitur* reference to NAAQS standards, why they failed to consider an action level II&S facilities based on the highest annual concentrations expected

after full implementation of MACT. Accordingly, where the EPA has treated the II&S facilities differently than the refineries, HON, SOCMI and P&R I and II, and coke ovens sectors, without sufficient reasons for doing so, the EPA has acted arbitrarily and capriciously in not including an action level for lead in the proposed fenceline monitoring standard.

[1594] Commenters stated there is no safe level of exposure to lead. They stated that the EPA's conclusion that all averages are below the NAAQS means that lead concentrations are "below levels of concern" is both inaccurate and not in line with how the EPA should be evaluating MACT standards in revising NESHAP provisions. In fact, just last month, the EPA Deputy Administrator of Enforcement and Compliance Assurance stated that "[t]he science is clear, there is no safe level of exposure to lead[.]" (EPA, EPA Releases Environmental Justice Toolkit for Lead Paint Enforcement Programs, https://www.epa.gov/newsreleases/epa-releases-environmental-justice-toolkit-lead-paint enforcement-programs#:~:text=%E2%80%9CThe%20science%20is%20clear%2C%20there,Deputy%20Assistant%20Administra tor%20for%20Enforcement (last visited Sep. 8, 2023).) Where the EPA was performing both a risk and technology review in 2020, the EPA erred in summarily concluding that 20 percent of the NAAQS is "below levels of concern" for a pollutant which the EPA acknowledges has no safe level of exposure.

[1594] Commenters stated lead is both a HAP and criteria pollutant. The EPA's discussion of the measured levels of lead being below the NAAQS in the context of proposed revisions to the NESHAP is hollow and meaningless. The MACT floor must reflect the maximum degree of emission reductions of HAP achievable (after considering cost, energy requirements, and non-air quality health and environmental impacts). (42 U.S.C. section 7412(d)(1), (2))

[1594] Commenters stated the EPA proposes the fenceline monitoring requirement pursuant to CAA section 112(d)(6) for the purpose of managing fugitive emissions. Commenters argued if the II&S facilities' lead emissions were deemed by the EPA to be in compliance with MACT at the maximum allowable limit, fenceline measurements for lead should not be as high as reported. Sampling data collected as part of the EPA's section 114 request shows that 24-hour average fenceline concentrations of lead at II&S facilities can be as high as 0.293 µg/m3, which is an alarmingly high concentration for a pollutant which the EPA acknowledges has no safe level of exposure. Therefore, the EPA should explain why they deviated from a MACT analysis of the lead concentrations and instead erroneously and summarily concluded that the lead levels are below levels of concern based on the NAAQS.

Response 4:

At the fenceline, based on fenceline monitoring conducted in 2022-23 at Integrated Iron and Steel facilities in response to the section 114 request, the highest monitored lead levels were found to be 5 times lower than the current air quality health NAAQS value. While this does not indicate no health risk at the fenceline, this value is the level EPA set in 2008 to establish an "adequate margin of safety to protect public health.". However, based on a lack of information on fugitive lead and other metal HAP emissions, the EPA does agree with this commenter that there is a need for more data gathering, both at the fenceline and from other sources on the facilities. EPA did not propose nor are we prepared to promulgate a requirement to monitor any metals other than chromium as part of the fenceline requirement, but we intend to gather more

fenceline monitoring data for lead in 2024 at Integrated Iron and Steel facilities to better characterize fugitive lead emissions. We intend to collect this data in a separate action under CAA Section 114 that will follow this final rule.

Comment 5:

[1594] Commenters noted the EPA's proximity demographic analysis established that communities within five kilometers (~three miles) of II&S facilities had a greater percentage of the population that identified as African American (27 percent versus 12 percent nationally) and a higher proportion of the population living below the poverty line (29 percent versus 13 percent). Commenters noted they supplemented this analysis by examining EJScreen (Version 2.2) data for communities near these facilities that are relevant to lead pollution (Table 1). They noted they specifically focused on (1) the percentage of the population under age five since lead exposure has the greatest negative health impacts on children and (2) EJScreen's lead paint proxy (the percentage of housing built before 1960) since this represents an additional major pathway for exposure to lead. [1594] Commenters noted they found that the communities within five km of II&S facilities had a slightly higher percentage of the population under age five (seven percent on average compared to a national average of six percent). Furthermore, they noted they found that these communities had over twice as much housing that likely has lead paint than the national average (66 percent versus 30 percent).

Table 1: EJScreen (Version 2.2) data for communities within five km (~three miles) of the eight active II&S facilities. Values in parentheses are national percentiles as reported by EJScreen. Facility average values are population-weighted averages.
<Column's with Facility, State, Population, People of Color, Low Income, Under age 5, Lead Paint (% Pre-1960 Housing)>

[1594] Commenters stated as evidenced by their analysis, demographic data shows that communities downwind of II&S facilities may already by overburdened by other exposures to lead (for which there is no safe level of exposure). Furthermore, the EPA is risking additional exposure to communities that are majority Black and/or economically disadvantaged by failing to establish a fenceline monitoring action level for lead, exacerbating environmental justice issues with which these downwind communities already contend. Accordingly, the EPA should establish an action level for lead as part of the fenceline standard.

Response 5:

For this rulemaking, we did not conduct any emissions or risk modeling to determine population exposures. Therefore, we conducted a proximity demographic analysis and not a risk-based demographic analysis. Although the proximity demographic analyses allow one to identify the potentially vulnerable populations residing near affected facilities, it does not capture variation in baseline exposure across communities, nor does it indicate that any exposures or impacts will occur and should not be interpreted as a direct measure of exposure or impact. EPA has provided information that is available for the public's understanding of potential impacts. See Comment 4 above in this section for EPA's explanation of the fenceline monitoring standard for chromium.

Comment 6:

[1596] Commenters stated the EPA's admission that the MACT floor limits will not result in emission reductions for unregulated hazardous air pollutants at sinter plants is concerning. While steel production is an important national industry and a key economic driver in Northwest Indiana, steps must be taken to reduce the significant adverse impacts on humans and the environment. In particular, US Steel's Gary Works' proximity to Gary, Indiana, a city with over 89 percent of its residents being people of color, should require a reduction in hazardous air pollutants. Neighborhoods in Gary have some of the highest levels in Indiana for many environmental justice indexes as reported by the EJScreen mapping and screening tool. Moreover, Gary's status as one of the worst places in the nation for asthma prevalence among adults and life expectancy should further underscore the importance of implementing stricter regulations to protect this overburdened community. Addressing these issues is also consistent with President Biden's recent Executive Order No. 14096 requiring federal agencies to consider adopting measures that minimize or mitigate disproportionate and adverse human health and environmental effects that raise environmental justice concerns. As a result, the commenters requested the EPA to promulgate lower MACT limits for existing sinter plants to reduce their significant environmental impact and help transform steel production into a cleaner process.

Response 6:

The EPA is directed, to the greatest extent practicable and permitted by law, to make environmental justice part of its mission by identifying and addressing, as appropriate, disproportionate and adverse human health or environmental effects of its programs, policies, and activities on communities with environmental justice concerns. The EPA's environmental justice policies promote justice, including access to health impact data, by providing information on the types of environmental justice harms and risks that are prevalent in communities with environmental justice concerns. The EPA's environmental justice policies do not mandate consideration of any specific factors or particular outcomes from an action. They provide that environmental justice analysis be performed, e.g., as part of regulatory impact analysis, as appropriate, so that the public can have this information For this action, the EPA is not required to recalculate a MACT floor that was established during earlier rulemakings. Anticipated health benefits resulting in the reduction of $PM_{2.5}$ under this regulation include decreased premature mortality, reduced hospitalizations for respiratory and cardiovascular symptoms, lower incidence of lung cancer, fewer lost works days, and others.

9. General

9.1 General Support or Opposition

Comment 1:

[1490] Commenters stated please protect our air quality here.

Response 1:

The EPA acknowledges the general support of the EPA proposed rules from the commenter.

Comment 2:

[1517] Commenters stated the proposed amendments represent a significant improvement over the current regulation and more closely conform to the requirements of the Clean Air Act. However, the proposed amendments fail to address electric arc furnaces located at integrated iron and steel manufacturing facilities. Electric arc furnace steelmaking operations are recognized sources of hazardous air pollutants. These operations exist at major source integrated iron and steel manufacturing facilities, but no emission limits have been established. The EPA has the responsibility to establish maximum achievable control technology standards for hazardous air pollutant emissions from new and existing electric arc furnaces located at major sources of hazardous air pollutants.

[1592] Commenters stated the proposed rule is inadequate and insufficient to meet the CAA's mandate to protect the public's health, property, and quality of life.

Response 2:

The EPA acknowledges the general support of the EPA proposed rules from the commenter. Regarding electric arc furnaces, that topic is beyond the scope of this current rulemaking. The EPA also disagrees with the sentiment that this rulemaking is inadequate and insufficient to meet the CAA's mandate.

Comment 3:

[1580] Commenters stated the top 10 air polluters in Allegheny County are:

- USS – Clairton Plant, Clairton;
- ATI Flat Rolled Products Holdings LLC, Brackenridge;
- Thermal Transfer Corp., Duquesne;
- PPG Industries Inc. – Springdale Complex, Springdale;
- Universal Stainless & Alloy Products Inc., Bridgeville;
- TMS International LLC, Braddock;
- Holtec Manufacturing, East Pittsburgh;
- Neville Chemical Co, Pittsburgh

<note, the comment letter only listed 8 polluters, not 10>

[1580] Commenters stated the EPA must take robust and quick action to limit pollution from power plants and industrial air polluters and should not stop here with the proposed rule. The Agency must expand the scope of the new rule to include best work practices that reduce toxic emissions from steel mills and ensure air monitoring and testing consists of ALL 12 harmful emissions, not simply chromium, as currently proposed.

Response 3:

This comment is beyond the scope of this rulemaking.

Comment 4:

[1489] Commenters requested the EPA to rescind the rulemaking notice because it does not contain adequate information to support what's being proposed. Commenters asked the EPA to carry out the following:

- Conduct a study that compares and contrasts the total cost of this proposed action to the iron and steel mill industries and contrast it with the Voluntarily Reduction of Uptime (VRU) method. VRU is calculated at hours needed to reduce the same amount of HAP but by reducing total uptime of all activities, which would be just the plant idling or total shutdown. The number of workers and the hours that they will miss should be calculated as well, but the US government should calculate them covering this cost in addition to the cost of lost business funds due to VRU;
- Compute the total pollution rate that would happen for production of the same amount of iron and steel that is produced on average per day by American iron and steel mills, but calculate it for China, India and Pakistan. Ensure that the rate for the items traveling from those countries to America is included; and
- Conduct a study on the lost revenue that the iron and steel mills will have because of this proposed amendment, and then calculate the amount of real wages that would be lost to the average worker at these plants. A large number of these workers are Black Americans and other disadvantaged groups and 99 percent are represented by Unions.

[1489] Commenters also made the following statements regarding what the EPA did not do with regards to the proposed amendments:

- The EPA did not produce any studies or information that would have spoken to hospitalizations, disease rates, health decreases or anything else from the iron and steel mills that would support this proposed rule. In other words there is only a presumption without evidence that the disadvantaged population groups in these areas are even impacted by the output of the iron and steel mill;
- The EPA did not conduct an in-person survey of these population groups to ask them if they are impacted by the iron or steel mill's HAP emissions;
- The EPA did not provide or conduct a study that shows the HAPs that are currently unregulated by NESHAP are harmful to humans in the capacity that they are promulgating;
- The EPA did not provide a reasonable methodology, nor equipment recommendations to measure the HAPs that are unregulated by NESHAP in this rule promulgation;
- The EPA did not provide a budget impact study for this rule promulgation, nor did they conduct an environmental impact study;
- The EPA did not provide their methodology of how they calculated output emissions for these HAPs;
- The EPA did not conduct a national security risk study; and
- The EPA was not clear about the Agency's use of the term "African American", specifically, whether the EPA intended the term to mean Africans who are migrants who have not yet attained citizen status, or Black Americans, which the commenter stated is the only official and designated category for Black Americans who have US citizenship. There is an incredible difference between Africans and Black Americans as most African Americans do not live in the same proximity as Black Americans. Additionally African Americans do not face the same challenges and disadvantages as Black Americans do.

Response 4:

The EPA acknowledges the additional research suggested by the commenter to further study the effects of the rulemaking. However, these suggestions are not required as part of the CAA rulemaking framework, so they are out of scope for the current rulemaking.

Comment 5:

[1720] Commenters stated according to the EPA's own 2020 Risk and Technology analysis and data (https://www.federalregister.gov/documents/2023/07/31/2023-15085/national-emission-standards-for-hazardous-air-pollutants-integrated-iron-and-steel-manufacturing) the Agency found that the integrated iron and steel source category poses very low risk under the current standards. That determination alone demonstrates that the EPA's proposal is unnecessary. Instead of pursuing policy agendas that target domestic iron and steel manufacturers, the EPA should instead focus on creating a regulatory structure that provides technically feasible and economically viable regulations.

[1591] Commenters stated they have extensive concerns about the proposed rule. Commenters stated the EPA's own analysis has determined that the integrated iron and steel industry proposes extremely low risk to the public with an ample margin of safety from the emissions this proposed rule is supposedly addressing. The proposed rule has been developed based upon very limited data and proposed unproven technologies. All while the proposed rule would impose significant expense to the industry to no measurable reduction in any real risk. Commenters noted that the costs discussed in their comments will show that in many cases the "cost per ton" figures are well beyond what Congress contemplated in the passage of CAA Section 112.

Response 5:

The EPA agrees that in the 2020 RTR, the EPA determined that the source category risks were acceptable and that the NESHAP provides an ample margin of safety (AMOS). The Clean Air Act, however, requires that EPA promulgate MACT standards for each category or subcategory of major sources that address each HAP that the source is known to emit. *See LEAN v. EPA*, 955 F.3d 1088, 1091 (D.C.Cir. 2020), *citing Nat'l Lime Ass'n v. EPA*, 233 F.3d 625, 634 (D.C. Cir. 2000). Because there are emissions from this major source category that are unregulated, those previously unregulated emissions must be addressed in this rule. Thus, EPA is required by law to issue this rule, addressing previously unregulated HAP. Furthermore, since EPA received updated data, it is concurrently promulgating technical updates to certain standards, based on improvements in emissions reduction, under section 112(d)(6). With respect to the argument that the costs are unreasonable or that the reductions or otherwise not cost effective, EPA reiterates that it is under a legal obligation to implement regulations addressing previously unregulated emissions. Our consideration of the cost of those requirements are guided by the factors described in CAA section 112(d).

Comment 6:

[1720] Commenters stated the EPA has not adequately engaged with the integrated iron and steel manufacturing sector in the drafting and issuing of this proposed rule. Commenters stated they have long supported robust community engagement and urged the EPA to work with the

regulated industries to develop sensible regulations that are feasible while ensuring the highest levels of environmental stewardship.

[1563] Commenters urged the EPA to reconsider the proposed MACT rules and work collaboratively with industry stakeholders to develop regulations that strike a more balanced approach between environmental protection and the preservation of American manufacturing competitiveness. It is crucial that any regulatory framework takes into consideration the technological limitations of the present and the financial constraints the industry faces.

[1563] Commenters stated the stringent compliance requirements outlined in these rules seem unattainable within the given timeframes, budgets, and technological constraints. This situation places an undue burden on American manufacturers, forcing them to divert significant resources away from innovation, growth, and job creation in order to meet these standards. Commenters encourage the EPA to collaboratively work with industry stakeholders to develop regulations that offer a more balanced approach before the implementation of these regulations.

[1591] Commenters stated the EPA should always strive for rules to be technically accurate, to have meaningful stakeholder engagement in preparation and to be legally defensible. These all require time to ensure that a final rule is based upon sound science and appropriately considers the costs and impacts. Commenters stated they appreciate the EPA's careful consideration of their comments and asked that the EPA please contact them if there are any questions.

Response 6:

The EPA acknowledges the commenters' input on this issue regarding additional communications and public outreach, and will consider the feedback to better inform the EPA's outreach in the future.

Comment 7:

[1497] Commenters stated the current proposal concerns them because they do not believe that all of the EPA's choices are based on sound science. Commenters stated the EPA has taken shortcuts in an effort to send a message about the Agency's environmental commitment rather than base decisions on the risk from iron and steel mills. It is clear from some of the proposed regulations that the EPA does not understand the intricate process of iron and steel making, and therefore the Agency makes assumptions that implementing new procedures will be easy. That conclusion is mistaken.

[1497] Commenters stated the EPA's own conclusion is that risk from iron and steel operations is low, which is not surprising given the sheer number of permit requirements. And yet the EPA believes that it is necessary to impose even more restrictive regulations, putting the domestic steel industry at risk.

[1497] Commenters also questioned the EPA's cost estimates. Commenters stated members have a long history of working with consultants and engineering firms to optimize performance in compliance with environmental regulations. Industry estimates based on input from experts demonstrates that the EPA has underestimated the costs to the industry and, as a result, underestimated the impact to the domestic iron and steel industry.

[1497] Commenters stated the projected benefits from the regulations are problematic. They stated the EPA has made a number of assumptions that do not have a strong basis in sound science or technical justifications. For instance, the EPA has reached conclusions about unmeasurable fugitive emissions that have no basis.

[1495] Commenters stated they have severe concerns about the proposed amendments to the National Emissions Standards for Hazardous Air Pollutants for integrated iron and steel manufacturing facilities 40 CFR 63 Subpart FFFFF....The current rules under consideration are not based on sound foundation or fact. Commenters stated the proposed amendments are a knee jerk response to a ruling by the courts recently for the sole purpose of making a rule for rule's sake, with no basis in science or practice. If these rules are allowed to move forward they will place a great hardship on one of the largest industries, not only in Indiana, but in the country with no evidence whatsoever that they will serve a purpose. Commenters stated the proposed amendments provide no benefit to the environment, and will place a great hardship on industry with a sure loss of jobs. Further these rules, with no merit, will result in a fertile ground for continued litigation that will not provide any benefit and will cost millions of dollars. Please remand these rules back for further review.

[Mass mailing]

I strongly urge the Agency to take a reasonable approach in amending the regulation.
It is my understanding that the above regulation, when using the EPA's conservative estimates, shows that Iron & Steel Facilities present low, acceptable risks with an ample margin of safety to protect public health. The currently proposed amendments have been based on limited data and do not consider variations in operations. In addition, potential measures required to meet the new proposed numerical limits have not been proven to be technologically or economically feasible for our operations. It is also our understanding that the EPA found no developments in practices, processes, or control technologies that necessitated revision of the existing opacity standards, but nonetheless EPA reduced the opacity standards in this proposed rulemaking. Any amendments made to the existing regulations should be consistent with the Clean Air Act, based on sound science, and consider the costs to implement and operate.

Response 7:

The purpose of this final rule is to fulfill the mandates of the LEAN Court decision, and CAA sections 112(d)(2)/(d)(3) and 112(d)(6). This action does not include a risk review. Regarding cost impacts, the EPA has made several revisions to the proposed standards to ensure the cost impacts will be quite reasonable, as described in the final rule preamble and various responses in this RTC document.

Comment 8:

[1550] Commenters stated under this proposed rule, steel mills will remain some of the worst toxic polluters in the country. The rule will only achieve a 15 percent reduction in toxic emissions, which is not enough to protect nearby communities. The EPA has the authority to hold these steel mills accountable for the irreversible damage caused to people's health.

[1550] Commenters stated the 10 steel mills operating in the U.S release more than 500 tons of toxic metals into the air of neighboring communities each year, and it is likely that more than one quarter of these emissions, i.e. more than 75 tons per year are lead. Current designs for steel mills also emit large quantities of toxic organic chemicals, including dioxins.

[1550] Commenters stated everyone is impacted by the production of steel, but especially people living near these facilities and those who work in the steel mills. The EPA's demographic analysis shows 27 percent of people living within 5 kilometers of a steel mill are black, more than twice the percentage of black people in U.S. population. Studies show that people working in steel mills have an increased risk of developing mesothelioma, an extremely aggressive form of lung cancer. Unfortunately, 4 of the 10 steel mills operating in the U.S are clustered in northwest Indiana. Commenters urged the EPA to strengthen these proposed standards.

Response 8:

We are finalizing standards in this rulemaking that address both fugitive emission sources and currently regulated emissions. We project emissions reductions of about 79 tpy of HAP metals and about 560 tpy of PM2.5 from UFIP sources in the Integrated Iron and Steel Manufacturing Facilities source category due to the new and revised standards for UFIP sources.

Comment 9:

[1596] Commenters stated they support the proposed rule and join the comments submitted by the Environmental Integrity Project to make further improvements on the regulations. Commenters noted they are writing separately to address the proposed rules regarding sinter plants because of their singular operation along the Indiana lakeshore and the implication for nearby communities with environmental justice concerns.

Response 9:

The EPA acknowledges the general support of the EPA proposed rule from the commenter.

Comment 10:

[1658; 1659; 1660; 1661; 1662; 1663; 1664; 1665; 1666; 1667; 1668; 1669; 1670; 1671; 1672; 1673; 1674; 1675; 1676; 1677; 1678; 1679; 1680; 1681; 1682; 1683; 1684; 1685; 1687; 1689; 1690; 1691; 1692; 1693; 1694; 1695; 1696; 1697; 1698; 1699; 1700; 1701; 1702; 1703; 1704; 1705; 1706; 1707; 1708; 1709; 1710; 1711; 1712; 1713; 1714; 1715; 1716; 1717; 1718; 1726; 1727; 1728; 1729; 1730; 1731; 1732; 1733; 1735; 1736; 1737; 1738; 1739; 1740; 1741; 1742; 1743; 1744; 1745; 1746; 1747; 1748; 1749; 1750; 1751; 1752; 1753; 1754; 1755; 1756; 1757; 1758; 1759; 1760; 1761; 1762; 1763; 1764; 1765; 1766; 1767; 1768; 1769; 1770; 1771; 1772; 1773; 1774; 1775; 1776; 1777; 1778; 1779; 1780; 1781; 1782; 1783; 1784; 1785; 1786; 1787; 1788; 1789; 1790; 1791; 1792; 1793; 1794; 1795; 1796; 1797; 1798; 1799; 1800; 1801; 1802; 1803; 1804; 1805; 1806; 1807; 1808; 1809; 1810; 1811; 1812; 1813; 1814; 1815; 1818; 1819; 1820; 1821; 1822; 1823; 1824; 1825; 1826; 1827; 1828; 1829; 1830; 1831; 1832; 1833; 1834; 1835; 1836; 1837; 1838; 1839; 1840; 1841; 1842; 1843; 1844; 1845; 1846; 1848; 1849; 1850; 1851; 1852; 1853; 1854; 1855; 1856; 1858; 1859; 1860; 1861; 1862; 1863; 1864; 1865; 1866; 1867; 1868; 1869; 1870; 1871; 1872; 1874; 1875; 1876; 1877; 1878; 1879; 1880; 1881; 1882;

1883; 1884; 1885; 1886; 1887; 1888; 1889; 1890; 1891; 1892; 1893; 1894; 1895; 1896; 1897; 1898; 1899; 1900; 1901; 1902; 1904; 1905; 1906; 1907; 1908; 1909; 1910; 1911; 1912; 1913; 1914; 1915; 1916; 1918; 1920; 1921; 1922; 1923; 1924; 1925; 1932] Commenters stated they support the proposed rule.

Response 10:

The EPA acknowledges the general support of the EPA proposed rule from the commenters.

Comment 11:

[1686; 1719; 1720; 1723; 1903; 1934] Commenters stated that they oppose the proposed rule.

Response 11:

The EPA acknowledges the general opposition of the EPA proposed rule from the commenters.

9.2 Other

Comment 1:

[1491] Commenters stated 4 of the 11 steel mills in the U.S. are located between Gary and East Chicago, resulting in 295 tons of toxic metal fugitive emissions per year, 1/4 of which are lead (7 tons lead per steel mill, equating to 28 tons of lead emitted annually here). NWI has the highest polluting mills in the nation, responsible for 90 percent of steel industry emissions nationwide. Three steel mills in Indiana are responsible for 227 tons of stack emissions from sinter plants, which burn steel mill waste and are outdated and unnecessary for mills to function.

Response 1:

EPA acknowledges the information provided by the commenter about emissions from steel mills in the United States.

Comment 2:

[1493] Commenters stated in addition to fenceline monitoring, real material protections need to be provided to residents who live adjacent to Edgar Thomson. These protections include green plant and tree barriers between Edgar Thomson and the community; air filters; home repairs so that residents can seal their houses during unsafe air quality days which are many; and central air conditioning so that homes are safe air locations during the high temperature days of the summer.

Response 2:

This comment is beyond the scope of this rulemaking.

Comment 3:

[1721] Commenters stated that the 2022 consent decree between the EPA and U.S. Steel requires U.S. Steel to undertake engineering studies concerning emissions controls and work practices contemplated in this NESHAP revision; the EPA should examine those documents, submissions, practices, etc. Having not seen the documents, it's not clear what value they will be, but they are meant to address numerous details the EPA considered in this NESHAP revision. (The commenter provided the full consent decree with appendices with their docketed comment.)

Response 3:

The EPA considered the materials related to the 2022 consent decree in developing this rulemaking. This rulemaking and the materials related to the 2022 consent decree reflect the EPA's experience gained through negotiating and resolving non-compliance with local, state, and federal rules at integrated iron and steel facilities.

Exhibit G – Second Declaration of Alexis Piscitelli

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

UNITED STATES STEEL CORPORATION,	)	No. 24-1171; consolidated with 24-1170 (lead) and 24-1177
Petitioner,	)	
v.	)	
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, and MICHAEL S. REGAN, Administrator, United States Environmental Protection Agency,	)	
Respondents.	)	

SECOND DECLARATION OF ALEXIS PISCITELLI

I, Alexis Piscitelli, am over 18 years of age and make the following declaration pursuant to 28 U.S.C. § 1746:

1. I am the Senior Director Environmental for North American Flat Roll at United States Steel Corporation ("U. S. Steel"), where I am responsible for ensuring compliance and reporting requirements are met in accordance with federal, state and local environmental permits and regulations. I have been employed by U. S. Steel for 27 years and have advanced through various positions.

2. I am providing this declaration on behalf of U. S. Steel's motion for stay of the United States Environmental Protection Agency's ("EPA's") National

Emission Standards for Hazardous Air Pollutants: Integrated Iron and Steel Manufacturing Facilities Technology Review, 89 Fed. Reg. 23,294 (April 3, 2024) ("Rule").

3. I have reviewed my previous declaration in this matter, dated July 2, 2024, and it remains true and accurate.

4. In paragraph 51 of my declaration, I stated, in part, that "U. S. Steel is already required to incur substantial costs in order to prepare for the upcoming Rule deadlines despite pending petitions for reconsideration and judicial review that may affect the applicability of the Rule and the obligations that it imposes on integrated iron and steel making."

5. I understand it has been argued that U. S. Steel will not need to incur substantial costs while judicial review is pending. This is entirely incorrect and reflects a lack of understanding of the impacts of the Rule on domestic steel operations.

6. As discussed in my prior declaration, the Rule requires U. S. Steel to incur immediate and significant costs. Many of the Rule's requirements are not achievable as stated in the Rule. Other requirements rely on technologies or work practices that are untested or unlikely to be effective. Others are not achievable on the schedule imposed by the Rule. As a result, there is no clear path to compliance with all aspects of the Rule. But U. S. Steel has

identified actions that must occur now for U. S. Steel to be in a position to achieve compliance, assuming solutions to the above difficulties can be found, by the deadlines in the Rule.

7. For example, U. S. Steel cannot comply with the HAP limits for sinter plants in the Rule. U. S. Steel must therefore evaluate alternative technologies and conducts trials now to determine how limits could be achieved if the limits can be achieved at all.

8. Other immediate projects required by the Rule include stack testing, implementation of stockline monitoring, and engineering for blast furnace stove modifications, changes to slag processing, research and development and trials to determine if technologies can actually achieve the new limits, and studies to prepare for fenceline monitoring.

9. These are tasks that cannot wait for judicial review to be completed for U. S. Steel to have any opportunity to meet the current deadlines in the Rule or to have sufficient information to obtain revision or amendment of the Rule by the current deadlines. Even undertaking these tasks now, U. S. Steel will not to be able to meet all the current deadlines in the rule.

10. U. S. Steel will need to spend $13 million in the short term for engineering studies, testing, and project development in these efforts to comply with the

Rule and satisfy its obligations. The $13 million is for initial engineering and studies. This cost will likely increase as more information is obtained.

11. In addition to involving millions in costs, these projects require modifications to the blast furnaces to install monitoring devices and outages of the blast furnaces, impacting both basic operations and production capacity, as iron cannot be produced when this work is being performed. Thus, U. S. Steel is and will continue to incur interruptions in operations and production to prepare for compliance with the Rule.

12. In total, U. S. Steel continues to expect the Rule will cost hundreds of millions of dollars, a substantial portion of which will need to be spent in the next two years unless a stay is used.

13. I am aware that EPA intends to correct and reconsider several aspects of the Rule, but until that process is complete it is not clear what impacts these actions will have on the final requirements in the Rule or what information EPA will require for reconsideration. This complicates, but does not alleviate, the need to take action now to prepare for the Rule's current requirements, including projects described above.

14. In my opinion, the Rule continues to impose unsafe operating conditions at integrated iron and steel mills. The schedule set forth in the Rule is not realistic and underestimates the time needed for compliance by several

years. And if emission units cannot achieve compliance by the scheduled deadlines and the deadlines are not stayed or extended, those emission units will be required to curtail operation. As a result, U. S. Steel is already required to incur substantial costs in order to prepare for the upcoming Rule deadlines despite pending petitions for reconsideration and judicial review that may affect the applicability of the Rule and the obligations that it imposes on integrated iron and steel making, and despite EPA's announced intend to correct and reconsider aspects of the Rule.

15. A stay of the Rule will mitigate these harms.

I declare, under penalty of perjury, that the foregoing is true and correct. Executed on September 19, 2024.

Alexis Piscitelli
Sr. Director Environmental – NAFR
United States Steel Corporation